

JPRS 77276

29 January 1981

# Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 80

**FBIS** FOREIGN BROADCAST INFORMATION SERVICE

#### NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [ ] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

#### PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available from Bell & Howell, Old Mansfield Road, Wooster, Ohio 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

29 January 1981

# WORLDWIDE REPORT

## NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 80

### CONTENTS

#### ASIA

#### AUSTRALIA

Anthony: We Can Meet World Demand for Nuclear Material (THE FINANCIAL AUSTRALIAN, 25 Nov 80) .....	1
ACTU Says U.S. Bases Threaten Nuclear Involvement (Jane Dargaville; THE AUSTRALIAN, 21 Nov 80) .....	2
Nuclear Energy Called Solution to Power Crisis in North (Errol Simper; THE AUSTRALIAN, 24 Nov 80) .....	3
Ranger Uranium Stocks Join Stock Exchange Lists (THE AGE, 15, 20 Nov 80) .....	5
Foreign Purchase Open, by Terry McGrann \$1 Billion League	
Bill Would Let Health Body Take Radioactive Land (Rodney Frail; THE SYDNEY MORNING HERALD, 14 Nov 80) ...	7
Labor Movement Steps Up Antinuclear Campaign (THE AGE, 17, 20 Nov 80, THE COURIER-MAIL, 20 Nov 80) ..	8
Strategy Moves, by Michael Gordon ACTU President's Views, by Michael Gordon Withdrawal From UAC	
Briefs	
Nuclear Power Plans	11
Uranium Trade Expansion	11
France Is Pacific Target	11
Uranium in South	12
Uranium for EEC	12
Waste Site for Japan	12

## BANGLADESH

- Government Upgrades Plans for Nuclear Powerplant  
(AFP, 10 Jan 81) ..... 13

## INDIA

- Ramanna To Return as Atomic Research Center Head  
(THE STATESMAN, 22 Dec 80) ..... 14
- Minister Gives Details of New Uranium Finds  
(PATRIOT, 18 Dec 80) ..... 15

## JAPAN

- Nuclear Fuel Reprocessing Plant Operational  
(KYODO, 16 Jan 81) ..... 16

## PEOPLE'S REPUBLIC OF CHINA

- First Atomic Reactor Rebuilt  
(XINHUA, 15 Jan 81) ..... 17

## TAIWAN

- Briefs  
UK Official Denies Supplying Uranium ..... 18

## EAST EUROPE

## CZECHOSLOVAKIA

- Data on Mochovce Nuclear Power Plant  
(Jozef Sella; ENERGIA ES ATOMTECHNIKA, No 6, 1980) ..... 19

## LATIN AMERICA

## BOLIVIA

- COROEN Geological Prospecting Shows Possible Uranium Find  
(PRESENCIA, 20 Nov 80) ..... 40

## NEAR EAST AND NORTH AFRICA

## INTER-ARAB AFFAIRS

- Atomic Weapons Race Spreading to Middle East  
(AL-HAWADITH, 23 Aug 80) ..... 42
- Dangers of Atomic Weapons  
Interview With General Hackett  
Israel Fears Egypt's Nuclear Development  
Strategic Studies Institute Interviewed  
French-Iraqi Nuclear Agreement



ERRATUM: In JPRS 77197, 19 January 1981, No 78 of this series entitled "STATUS OF ARAB NUCLEAR POTENTIAL," please change sourceline on p 1 to read: Beirut AL-MUSTAQBAL AL-'ARABI in Arabic September 1979 pp 6-35, to correct date.

## ISRAEL

- Decision on Nuclear Power Expected in April  
(THE JERUSALEM POST, 5 Dec 80) ..... 61

## SYRIA

- Syria Said To Obtain Nuclear Weapons Under Soviet Friendship Treaty  
(AL-MUSTAQBAL, 27 Dec 80) ..... 62

## SUB-SAHARAN AFRICA

## MAURITIUS

- Nation's Energy Options Discussed  
(LE MAURICIEN, 13 Oct, 25 Nov 80) ..... 63
- Pro, Anti Nuclear Energy, Germain  
Comarmond Interview  
Plate Island Nuclear Power Plant

## WEST EUROPE

## FINLAND

- Nuclear Firm Authorities Defend Plant Cost, Safety  
(Risto Valkeapaa; HELSINGIN SANOMAT, 14 Dec 80) ..... 69

## FRANCE

- Status of Nuclear Powerplant Construction Program  
(ENERGIA NUCLEAR, Mar-Apr 80) ..... 75
- Briefs  
Nuclear Plant Reports Accident ..... 78

## NETHERLANDS

- Interchurch Peace Council Opposes Nuclear Weapons  
(NRC HANDELSBLAD, 25, 27 Nov 80) ..... 79
- Reactions to Synod Stance  
IKV Ideology, G. Van Benthem Van Den Bergh
- Dutch, Brazilian Collaboration on Nuclear Energy Postponed  
(Roel Janssen; NRC HANDELSBLAD, 5 Dec 80) ..... 83

ANTHONY: WE CAN MEET WORLD DEMAND FOR NUCLEAR MATERIAL

Canberra THE FINANCIAL AUSTRALIAN in English 25 Nov 80 p 2

[Text]

AUSTRALIA could become one of the world's leading energy exporters, the Deputy Prime Minister and Minister for Trade and Resources, Mr Anthony, said in Sydney yesterday.

Mr Anthony told members of the Sydney Chamber of Commerce that despite the uncertainty of the world economic environment, the presence of Australia's energy resources with reserves considerably above requirements, gave the country the opportunity to become a world leader.

He said uranium in Australia was "on the move" and the country was in a strong position to meet the world's

needs for nuclear materials in the 1980s and beyond.

Mr Anthony said the election of Ronald Reagan as US President augured well for the Australian mining industry.

"Mr Reagan's platform calls for an accelerated use of nuclear energy for peaceful purposes through technologies that have been proven efficient and safe," he said.

He said the US commitment would give a lead to other countries to "bring about a similar development."

"The momentum of Australia's advance into the world market must be maintained."

AUSTRALIA

ACTU SAYS U.S. BASES THREATEN NUCLEAR INVOLVEMENT

Canberra THE AUSTRALIAN in English 21 Nov 80 p 3

[Article by Jane Dargaville]

[Text] The ACTU yesterday renewed its attack on Government plans to let the US set up military bases in Western Australia and the Northern Territory.

The ACTU President, Mr Dolan, told the ACTU executive annual conference in Melbourne yesterday that the union movement was gravely concerned about the Government's proposal.

He said the ACTU believed the proposal could draw Australia into a nuclear war.

In September the Prime Minister, Mr Fraser, said the US wanted to spend more than \$1000 million over the next few years setting up military bases, with major developments at Darwin and at Cockburn Sound, Western Australia.

Mr Fraser said the Government accepted that US B-52 bombers with nuclear weapons aboard would fly in and out of the country.

Mr Dolan said further Australian involvement in providing military facilities for the US compromised Australia's ability to remain independent.

"The ACTU executive adopted a resolution expressing its concern over the Government's proposal following a submission by the national council of the Amalgamated Metal Workers and Shipwright Union," Mr Dolan said.

Protest

"We believe the trade-union movement has a deep commitment and responsibility in promoting and developing the continuance of peace, and we have called on our members to launch the strongest protest against the provision of these proposed facilities."

Mr Dolan conceded that the ACTU would have difficulty in implementing bans to stop the building of military bases.

"As far as Darwin is concerned, we don't have any control over the RAAF facilities, but if the US were to dock at shipyards where union members were employed, we would be able to exercise some power," he said.

He said the ACTU would seek a meeting with the Government on the issue.

CSO: 5100

NUCLEAR ENERGY CALLED SOLUTION TO POWER CRISIS IN NORTH

Canberra THE AUSTRALIAN in English 24 Nov 80 p 3

[Article by Errol Simper]

[Text] The introduction of nuclear power is the long-term solution to the Northern Territory's electricity generation crisis, the Territory's Chief Minister, Mr Everingham, now believes.

He said in Darwin yesterday that a team of energy experts investigating the Territory's power options would be looking closely at nuclear power.

"I'll know a lot more when I get their report, probably some time in January, but superficially at least, nuclear power appears to be the answer," he said.

"I had nagging fears about it until I visited British and French nuclear power plants recently but what I saw in Britain allayed many of those doubts."

He thought nuclear power generators would be introduced in Australia within the next six to seven years.

Serious

The Territory's isolation and lack of coal had thrust it into a power crisis which had to be dealt with, he said.

"We lack coal, and Darwin's distance from NSW and Queensland makes the carriage of coal extremely expensive," he said. "That means we have to rely on oil. The cost of oil and possible future scarcities mean that we have to look past oil as a power source."

He said the Commonwealth would have to meet a \$48 million bill this year for Darwin's electricity supply, the difference between what it costs to produce the electricity and the maximum price Darwin residents pay.

He said there was a danger that the Commonwealth would decline to continue such a subsidy.

The Territory was probably committed to building a coal generator in the short term but nuclear power looked the most likely long-term solution.

He said that philosophically, he was neither pro or anti-uranium. It was a matter of finding the most practical solution to a serious problem.

Whether the Territory eventually had a nuclear reactor was probably tied in with the question of uranium enrichment plants being allowed in Australia, he said.

The Northern Territory has massive reserves of uranium ore in its Alligator Rivers region.

CSO: 5100

RANGER URANIUM STOCKS JOIN STOCK EXCHANGE LISTS

Foreign Purchase Open

Melbourne THE AGE in English 15 Nov 80 p 33

[Article by Terry McCrann, business editor]

[Excerpts] Next Wednesday the Ranger uranium company, Energy Resources of Australia, will join the stock exchange lists and it is likely to immediately join the top 10 in terms of market capitalisation on the boards.

Broker estimates of initial prices for ERA shares range from \$2.20 to \$2.50. This would put a total value on the company of between \$890 million and \$1015 million.

There is certain to be considerable buying support for ERA next Wednesday because it has been the glamor float in Australia for the decade but one which overseas investors were specifically excluded from because of the Government's uranium and foreign investment policies.

However there is nothing to stop overseas investors buying ERA shares on market with Australian nominee addresses; and their undoubted enthusiasm to buy into Australia's first major uranium mine will under-write a solid base for ERA's share price.

\$1 Billion League

Melbourne THE AGE in English 20 Nov 80 p 21

[Excerpt] Energy Resources of Australia leapt into the \$1 billion league when it was listed yesterday.

Shares in the uranium company opened at \$2.60, giving anyone fortunate enough to secure shares in the float an immediate 160 per cent profit.

In Melbourne the shares reached \$2.75, dipped to \$2.55 and closed at \$2.65.

When the stock exchange closed public shareholders in ERA were sitting on a paper profit of \$95 million for a cash outlay of \$57.5 million.

In Sydney, the shares were given a very enthusiastic welcome to the lists where they sold up to \$3 only 1700 shares were traded at that price before easing to close at \$2.63. [as published]

At \$2.65 the company is valued by investors at \$1,076 million, which means it ranks 9th on a stock market value basis.

Peko-Wallsend and EZ Industries each hold 30.8 per cent of ERA's 405.9 million shares. This means that their holdings were each worth \$331 million at yesterday's close.

The unlisted German shareholders' interests are worth \$152 million and the unlisted Japanese shareholdings are worth nearly \$109 million.

CSO: 5100

## AUSTRALIA

### BILL WOULD LET HEALTH BODY TAKE RADIOACTIVE LAND

Sydney THE SYDNEY MORNING HERALD in English 14 Nov 80 p 3

[Article by Rodney Frail]

[Text] Legislation giving the Health Commission power to acquire land contaminated by radioactivity was introduced in State Parliament yesterday.

use the proposed amendments to the Health Commission Act to acquire contaminated land at Hunters Hill if negotiations with the owner, which have been going on for four years, are unsuccessful. [as published]

Introducing the bill, the Minister for Health, Mr Stewart, said it would allow the Health Commission to acquire by purchase, lease, exchange, resumption or appropriation any contaminated land or premises to carry out decontamination. [as published]

He told the House that land or premises contaminated by radioactive material were a potential health risk.

Outside the House, Mr Stewart said the bill had not been drafted with Hunters Hill in mind, but it highlighted the need for such legislation.

In this case about 1,500 tonnes of contaminated waste from a nearby factory which extracted radium from uranium ore was dumped in Nelson Parade, Hunters Hill, 60 years ago. [as published]

The State Government decided four years ago that the soil in the vicinity of three houses in the street would have to be removed.

Mr Stewart said the Government had purchased two houses, including the home of the former Conciliation and Arbitration Commission Judge, Mary Gaudron.

It had been unable to reach agreement on a price with the owner of the third house.

Mr Stewart said this house and one of the others would have to be demolished and the ground excavated.

If these negotiations were not completed soon the legislation would have to be invoked.

He said a site was still being selected for the dumping of the radioactive soil in an "isolated" area.

Mr Stewart would not comment on whether the site would be in a country area, but said it would not be dumped at sea.

CSO: 5100



## AUSTRALIA

### LABOR MOVEMENT STEPS UP ANTINUCLEAR CAMPAIGN

#### Strategy Moves

Melbourne THE AGE in English 17 Nov 80 p 3

[Article by Michael Gordon]

[Excerpt] The political and industrial wings of the labor movement are about to intensify campaigns against the mining and export of uranium and the proliferation of nuclear power.

The ACTU this week will consider detailed proposals for banning the supply of paint and equipment to Northern Territory uranium mines.

The State branch of the Labor Party decided yesterday to campaign against French imports until the French Government ceased testing nuclear weapons in the Pacific.

The Party State Conference also warned of a similar campaign against Japanese imports "should the Japanese Government carry out its stated intention to dump nuclear waste in the South Pacific".

The conference also authorised the ALP's anti-uranium committee to prepare material to assist in a "full scale campaign against the development of uranium and the proliferation of nuclear weapons."

The ACTU is believed to have compiled a list of contractors servicing the Ranger mine in the Northern Territory.

The new president of the ACTU Mr Dolan, is expected to support the imposing of bans to make ACTU policy against uranium effective.

The ACTU Executive--meeting for the first time since Mr Dolan took over from Mr Bob Hawke--will consider a wide range of important issues, including the future of wage indexation.

#### ACTU President's Views

Melbourne THE AGE in English 20 Nov 80 p 3

[Article by Michael Gordon, chief industrial reporter]

[Excerpts] The president of the ACTU, Mr Dolan, yesterday conceded that Australian unions were about two years too late to take effective action against the development of the uranium industry.

Mr Dolan was speaking after the ACTU executive stopped short of urging affiliated unions to ban the supply of labor and equipment to uranium projects.

Asked about the decision, Mr Dolan said: "We're not declaring a ban on it but we are seeking...to influence members who are preparing materials or providing other services not to do so. [as published]"

The executive decided to circulate a list of contractors and suppliers of equipment to the industry and asked to consult their membership on what course to adopt.

"The policy is still the same--that is a recommendation of a complete ban on all uranium projects to our affiliates and through them, to our members," Mr Dolan said. "It's not happening at the present time and I think one of the problems that we face is that we are about two years too late." [as published]

Mr Dolan said he believed that if the ACTU congress had adopted in 1977 the policy it carried last year, "we'd probably be a bit further down the road". The executive decided to produce a pamphlet for workers in the industry outlining dangers to them of low-level radiation. [as published]

The executive also decided to withdraw from the Federal Government Uranium Advisory Council because it believed no purpose was being served by its continued participation. Mr Dolan said that while the council was set up to advise the Government on safety, health and welfare issues, and the sale of Australian uranium, it had been told of Government decisions only after they had been made.

Decisions on uranium follow a visit by Mr Dolan and other ACTU officers, Mr Bill Kelty and Mr Jim Roulston, to Northern Territory uranium sites.

The 1977 ACTU congress pressed the Federal Government to hold a referendum on the question of uranium. When the Government rejected the proposal, the ACTU failed in its effort to obtain the attitudes of workers who could be called to work in the industry.

At last year's congress a proposal pressed by Mr Dolan's predecessor, Mr Bob Hawke, which recognised the "reality" of mining which was proceeding in the Northern Territory was defeated. A policy backed by Mr Dolan which expressed total opposition to uranium mining and called for a campaign to convince workers to leave the industry was endorsed overwhelmingly. [as published]

#### Withdrawal from UAC

Brisbane THE COURIER-MAIL in English 20 Nov 80 p 8

[Excerpt] Melbourne.--The Australian Council of Trade Unions has withdrawn from the Uranium Advisory Council which assists the Federal Government on safety, health and welfare regarding uranium and overseas uranium sales.

And it has endorsed an "educative campaign" aimed at persuading unionists not to work on uranium mining projects.

The ACTU President, Mr Dolan, said last night that the withdrawal arose out of a debate at the ACTU executive yesterday.

He said the ACTU agreed in 1978 on the invitation of the Federal Government to be participant in the council. It was originally represented by ACTU Assistant Secretary Mr Bill Kelty, but since the middle of this year by the West Australian Trades and Labor Council, secretary, Mr Peter Cook.

"It was agreed by the executive that there's no good purpose being served by the ACTU being represented further on that advisory council," Mr Dolan said.

"It could be said to compromise our policy against uranium mining to some extent.

"The only advice we could give them on any of these issues is that we don't believe uranium should be mined," Mr Dolan said.

CSO: 5100

## BRIEFS

**NUCLEAR POWER PLANS**--The SEC is not the sort of subject most Victorians think about all that much, except when the power bill arrives. The State Government, intent on bringing industry to Victoria, takes the SEC's advice on future power demands. But the State Opposition this week called for a Royal Commission on the SEC. It said the commission habitually lied to the Government, was in a financial mess and provoked labor disputes, and that Victoria would face electricity shortages within four years through managerial incompetence. On the Newport power station, the SEC is engaged in a continuing controversy about pollution. The equipment necessary for the Environment Protection Authority to monitor emissions from Newport was up to two years away from being effective. Finally, there is the question of nuclear power. The SEC has commissioned British consultants to consider sites for nuclear power stations in Victoria. At this stage, the study is only "notional", but Mr Trethowan has said the SEC had to study all economic power alternatives for development after Loy Yang. [Damien Murphy] [Excerpts] [Melbourne THE AGE in English 14 Nov 80 p 3]

**URANIUM TRADE EXPANSION**--Canberra.--More uranium projects should now be allowed to proceed to maintain the momentum of Australia's advance into the world's uranium markets, the Deputy Prime Minister, Mr Anthony said yesterday. He told a French trade mission that a large proportion of production from the four uranium projects now under way had already been committed. "Export of uranium from the Mary Kathleen mine started in 1977," he said. "In addition three new projects have been approved. The first shipment from Nabarlek mine was made from Darwin two days ago. The Ranger and Yeelirrie mines are under construction. A large proportion of the production from these existing approved uranium projects is already committed. Additional uranium projects should now proceed so that the momentum of Australia's advance into the world market can be maintained." Mr Anthony said he shared the French view that in the longer term, nuclear generation of electricity was the only answer. He said: "Australia is now developing its huge uranium resources to meet the inevitable increase in the world's demand for this important energy source." [Text] [Brisbane THE COURIER-MAIL in English 13 Nov 80 p 1]

**FRANCE IS PACIFIC TARGET**--Trade union leaders from Pacific countries yesterday decided not to boycott Japanese goods in protest against Japan's plans to dump nuclear waste in the Pacific Ocean. At a meeting in Nadi, Fiji, the leaders agreed their protests should instead be directed against France, which continues to test nuclear weapons in the South Pacific despite vehement opposition from the people of the area. The general secretary of the Fiji Trades Union Congress, Mr James Raman, said yesterday Japan was only planning to dispose of its nuclear waste

in the Pacific, whereas France was still testing nuclear bombs. France had continued to ignore workers and governments with blatant arrogance, he said. [Text] [Canberra THE WEEKEND AUSTRALIAN in English 15-16 Nov 80 p 3]

**URANIUM IN SOUTH**--The Deputy Prime Minister, Mr Anthony, said the Olympic Dam project joint venturers, Western Mining Corporation Holdings Ltd and BP Australia Ltd, had made impressive progress with exploration and planning work in the huge copper, uranium and gold venture in South Australia. "If the impressive performance to date is any indication, this huge project and its associated township and infrastructure will go ahead and be counted along with Mt Isa and Broken Hill in the years to come as one of Australia's great mining towns," Mr Anthony said. "Although it will only be produced as a co-product, uranium from the Olympic Dam project could equal the production of the existing approved mines in the Northern Territory. When it is recognised that South Australia also has other proven uranium reserves at Beverley and Honeymoon it is clear that the State is destined to become a major energy-producing area in the decades ahead, supplementing the significant mineral resources of the Olympic Dam and Stuart Shelf area." [Text] [Perth THE WEST AUSTRALIAN in English 18 Nov 80 p 67]

**URANIUM FOR EEC**--Australia's prospects of supplying EEC markets with uranium have improved following an apparent change in attitude by the EEC's nuclear regulatory organisation, Euratom. Recent information from Brussels to the Australian Government suggests there will be no objections to Australia implementing nuclear safeguards agreements with individual members of the EEC. [as published] The change in Euratom's attitude--thought to be mainly a result of a change in personnel in Euratom--clears the way for the signing of a safeguards agreement with France, possibly before the end of the year. In September, the Deputy Prime Minister, Mr Anthony, said that Australian and French officials had agreed on a draft nuclear transfers agreement which was being submitted for both Governments to consider. [Text] [Melbourne THE AGE in English 20 Nov 80 p 22]

**WASTE SITE FOR JAPAN**--Four Japanese nuclear safety experts will leave Tokyo tomorrow in a fourth attempt to convince South Pacific countries that ocean-bed dumping of low-level nuclear waste is safe. But a spokesman for the Nuclear Safety Bureau admitted today he expected the attempt would be no better received than earlier missions, including one to Australia. The mission will go to Fiji, Cook Islands, Niue, Tonga and Tuvalu in its final bid to promote Japan's plans to dump low-radiation waste off the Mariana Islands. The previous campaigns failed to persuade Pacific countries that the experimental plan to drop 10,000 sealed 200-litre concrete-lined drums 900km north of the Marianas would cause no contamination of sea life. The scientists, headed by Mr Arkio Horikawa of the Science and Technology Agency, will spend three weeks promoting the safety of the plan. During their Australian mission, the Japanese, headed by the Nuclear Safety Bureau's vice-director, Mr Hiroshi Goto, were urged to review their dumping plans until all Pacific countries agreed. [Alan Goodall] [Excerpt] [Canberra THE AUSTRALIAN in English 21 Nov 80 p 9]

CSO: 5100



GOVERNMENT UPGRADES PLANS FOR NUCLEAR POWERPLANT

BK101344 Hong Kong AFP in English 1252 GMT 10 Jan 81

[Text] Dacca, 10 Jan (AFP)--The Bangladesh Government has decided to raise the capacity of its proposed nuclear power project at Roopur to 300 mW from the original plan of 125 mW, state Minister for Science and Technology Dr R.A. Ghani said today.

In an interview with AFP, Dr Ghani said the decision to instal a 300 mW plant was taken recently after considering the economic, technical and other benefits.

He said with the setting up a 300 mW plant instead of 125 mW, generation of electricity would go up by about 250 percent, but the cost would increase by only 150 percent.

The minister said negotiations were underway with France to procure the reactor for the project which was originally mooted in 1961 during Pakistani days but could not be taken up for implementation due to the lack of funds.

Dr Ghani said that the government had intensified its efforts for implementation of the project and was in touch with "friendly countries," including Islamic states, for mobilising funds for the project expected to cost about \$600 million.

The minister declined to name the countries, but informed sources said that Saudia Arabia, the UAF and a number of Gulf and other countries had been approached to finance the nuclear power project at Roopur, 75 miles west of Dacca. He indicated that the government was considering the possibility of mobilising more domestic resources for the project which would meet the existing shortfall in Bangladesh's power requirement besides meeting future needs.

Last month, Mr Girard, vice-president of French firm "Technicatome," an organ of the Atomic Energy Commission of France, visited Dacca and had "fruitful talks" with Bangladesh authorities on the project. He also had a meeting with Dr Ghani and an announcement later said that Technicatome had agreed to supply the reactor for the project.

CSO: 5100

**RAMANNA TO RETURN AS ATOMIC RESEARCH CENTER HEAD**

Calcutta THE STATESMAN in English 22 Dec 80 p 1

[Text] Dr Raja Ramanna will return in a few days as director of the Bhabha Atomic Research Centre, it is reliably learnt. He will also be Secretary in the Department of Atomic Energy and member of the Atomic Energy Commission in charge of research and development.

Mr Homi Sethna will be Principal Secretary of the Department and remain chairman of the Commission.

Dr. Ramanna left BARC, of which he had been director for several years, in July, 1978, to take up the post of Scientific Adviser to the Defence Minister. He has also been Director-General, Defence Research and Development Organization, and Secretary of the Department of Defence Research. He will hold concurrent charge of these posts until a successor to him is found in the Defence Ministry.

For the past 2 1/2 years, BARC, which has a total staff strength of more than 10,000 has been without a Director. This has badly affected its working and the morale of its personnel.

Differences between Mr Sethna and Dr Ramanna have been mentioned in different contexts; there has also been speculation about the reasons for Dr Ramanna's transfer from the Department of Atomic Energy to the Ministry of Defence and for the delay in his return to BARC to tone up its working. The Prime Minister, it is understood, has decided that he and Mr Sethna must work together to improve the performance of atomic energy establishments, which has lately been the subject of much criticism.

CSO: 5100

## MINISTER GIVES DETAILS OF NEW URANIUM FINDS

New Delhi PATRIOT in English 18 Dec 80 p 5

[Text]

**A**DEQUATE uranium and other raw material resources to meet requirements of the nuclear power programme currently envisaged have been discovered in the country Minister of State for Science and Technology C P N Singh said in the Lok Sabha on Wednesday, reports PTI.

Intensive surveys and exploration conducted by the minerals division of the Department of Atomic Energy have resulted in the identification of a number of new uranium deposits in Madhya Pradesh, Himachal Pradesh, Uttar Pradesh, Karnataka and the North-Eastern region, in addition to the already known Singhbhum thrust belt in Bihar. The Jaduguda uranium mine, supported by a mill with a capacity to treat 1,000 tonnes of ore per day, went into production in 1984.

Mr Singh said the Department of Atomic Energy's requirement of tantalum was being successfully met by columbite-tantalite ore being produced domestically.

Survey and assessment of the beach sand deposits had indicated self-sufficiency in thorium, he added.

**BERYL ONE**

The Minister said the atomic minerals division had also stockpiled sufficient quantities of beryl ore through departmental production and procurement from private sources in the country.

Mr Singh agreed with Mr K P Singh Deo that the Indian industries both in public and private sectors had the desired capacity to manufacture complex and high precision heavy components required for the atomic plants in India.

At present, he said, about 80 per cent of the equipment required for a nuclear power station could be manufactured in the country with indigenous material.

**LAPSES RECTIFIED**

Mr Singh, assured the House that "lapses" in the nuclear energy policy during the last three years have been rectified.

Replying to questions by Mr K P Singh Deo, he said a fast breeder test reactor with French collaboration was under construction at Kalpakkam at an estimated cost of Rs 58.72 crores.

On the basis of the experience to be gained in the construction and operation of the test reactor, it would be possible to set up further fast breeder reactors without foreign help, he added.

He said that alongwith the other heavy water plants, the heavy water project at Kosi is estimated to meet some of the total requirements of heavy water for the nuclear plants under construction.



## NUCLEAR FUEL REPROCESSING PLANT OPERATIONAL

OW161007 Tokyo KYODO in English 0936 GMT 16 Jan 81

[Text] Tokyo, 16 Jan (KYODO)--The nation's first plant designed to recover plutonium from used uranium fuel goes into full operation Saturday at Tokaimura, Ibaraki Prefecture, 10 years after construction began in 1971. Full operation of the yen 64 billion (\$320 million) plant, built by the power reactor and nuclear fuel development corporation, was initially set for 1975 but was postponed because of protracted negotiations between Japanese and U.S. Governments.

Washington had been reluctant to permit the plant to go into operation since plutonium is a major atomic bomb component. Mechanical problems during trial runs were also responsible for delaying full operation of the plant, a spokesman for the government corporation said.

"The plant opens the way for the establishment of nuclear fuel recycling, the major pillar of our nuclear energy policy," the spokesman said. "Its significance is enormous."

The plant, completed with technical assistance from the French glassmaker Saint-Gobain Industries, plans to process 100 to 140 tons of used nuclear fuel a year. At present 350 tons of used fuel are discharged by 20 light-water type nuclear reactors now in operation in Japan. The amount of plutonium recovered from the used fuel will be enough to produce about 1 million kilowatts of electricity per hour, the spokesman said.

However, the two governments have not come to an agreement on how the plutonium should be extracted from the used nuclear fuel, he added. The U.S. Government wants to ensure that the corporation obtains plutonium in such a form that the radioactive element cannot be used to produce atomic bombs, the spokesman said.

The United States has prevented South Korea from importing French-made reprocessing facilities for used nuclear fuel.

The Tokaimura plant goes into full operation under a Japan-U.S. provisional agreement which set the volume of used nuclear fuel to be processed there at 99 tons by the end of April. The plant is expected, however, to exceed the prescribed level by the end of February. Officials of the two governments will thus reopen talks to discuss a possible extension of the agreement and Japan may request that it be allowed to reprocess an additional 50 tons of used nuclear fuel at the plant, the spokesman said.

CSO: 5100

**FIRST ATOMIC REACTOR REBUILT**

OW150726 Beijing XINHUA in English 0711 GMT 15 Jan 81

[Text] Beijing, 15 Jan (XINHUA)--China's first atomic reactor built in the late fifties has been reconstructed and its performance greatly improved, the PEOPLE'S DAILY reports today. A full-power test operation in the last few days of 1980 proved that all technical parameters met the designed standards, the report says.

The rebuilt reactor, the paper says, can compare with the advanced reactors of the same type in other countries. "This is a new important achievement made by Chinese scientists, technicians and workers in the field of atomic energy," it stresses.

The heavy water-type reactor was first built in 1958 by the Atomic Research Institute for experimental purposes. It came to the end of its expected life in the early seventies when erosion, leaks and cracks were found on its body. The reconstruction consisted of eight systems, including the replacement of its internal shell. Elaborate precautions were taken to protect the participants in the project and prevent pollution of the environment. None of the participants suffered any harm from radiation. In the 22 months of work, they received an annual average of less than one rem per person (the national standard is five rems). The reconstructed reactor is expected to work for another 15 years, the paper adds.

CSO: 5100

TAIWAN

BRIEFS

UK OFFICIAL DENIES SUPPLYING URANIUM--Taipei--An official of the Republic of China Executive Yuan's Atomic Energy Commission said on 11 January: The reports by foreign news agencies that Great Britain is supplying the Republic of China with a batch of spent uranium is not correct. He said: Such a thing never happened. This official, who refused to be identified, said: Our country has repeatedly stated that it will not use spent uranium nor will it engage in producing nuclear bombs. [Text] [OW170552 Taipei LIEN HO PAO in Chinese 12 Jan 81 p 2]

CSO: 5100

DATA ON MOCHOVCE NUCLEAR POWER PLANT

Budapest ENERGIA ES ATOMTECHNIKA in Hungarian Vol 33 No 6, 1980 pp 271-278

[Article by Jozef Selle], engineer, Bratislava Section, Energetics Research Institute, Prague: "Possibilities of Remote Heating From the Planned Nuclear Power Plant in Mochovce]

[Text] Introduction

The long-range development plan of the energetic system of Czechoslovakia includes the construction of a nuclear power plant in Mochovce, using Type VVER 440 reactors. The site of the planned nuclear power plant is in southern Slovakia, and is about 17 to 30 km away from the nearest urban area. The original plans did not consider the supply of remote heat from the nuclear power plant.

The complex fuel and electric-power supply situation, resulting from the explosive increase in the world prices of energy sources created a major task for the economy of Czechoslovakia also. To meet the needs of the economy, it is necessary to maximize the utilization of all relatively cheap fuels and energy types, and increased attention must be given to the economical establishment of nuclear power plants. The most effective way to utilize the energy content of primary fuels is to produce both heat and electric power. If the conditions are favorable, the degree of utilization of the energy content of the fuel can be increased 1 to 1.5 fold compared to the generation of electric power alone.

For this reason, it became necessary to examine the possibilities of supplying heat to nearby settlements and plants from the nuclear power plant. This is to be done in conjunction with the development of the overall concept of the nuclear power plant in Mochovce, which is designed to use four Type VVER 440 reactors. A report was prepared during the preparatory phase

of the nuclear power plant investment project to assist the supervisory and state-administration authorities as well as the special enterprises involved in reaching proper decisions.

The aim of our study, carried out in 1978 at the Energetics Research Institute in Bratislava, is the examination of the possibilities of supplying heat to industrial and communal facilities in the area of Nyitra, Leva, Verebely, Tolmács, and Aranyosmarót. The study also includes preliminary engineering and economic calculations to assess the effect of the heat-supply system to be established on the operation of the nuclear power plant. This basic study deals with the following subjects:

- The magnitude of the heat output capable of being connected to the nuclear power plant in Mochovce (hereinafter called the AEMO) until 2000;
- The concept of the remote heating line connecting the AEMO and the above area;
- Methods of feeding out the heat output from the nuclear power plant.

The conclusions of the study indicate the feasibility of a hot-water heating system from the AEMO for the above area, as well as the effectiveness of the heat supply. Our preliminary surveys and the full study gave a clear picture about the suitable engineering configuration of the nuclear power plant, the remote-heating line, and the heat-supply system, as well as about the fate of the boiler plants designed for fossil fuels, now in the stage of preparation.

Below we describe the possible solutions for heat supply from the AEMO, taking the long-range needs of the heat-supply system into consideration.

#### Determination of the Heat Demand Capable of Being Met by the Nuclear Power Plant in Mochovce

Special attention must be given to the determination of the heat demand capable of being met from the nuclear power plant since the magnitude of the heat supply, its parameters, and its content diagram affect basically the configuration of the power plant, the remote-heating system, and the local heat supply facilities. We may state that the character and the magnitude of the heat demand determines the configuration of the extensive regional heat-supply system.

In the course of our preliminary studies we determined the future needs of heat in the 30 km surrounding area of the heat-supplying nuclear power plant for the year 2000 considering the following factors:

- The heat demand of the residential areas and their associated facilities at the present and in the subsequent plan periods;
- Character and parameters of the long-range heat demand of the industrial and agricultural establishments;
- The includability of potential industrial and agricultural users into the heat-supply system of the AEMO;
- The contemplated topographic layout of the remote heat pipe system and the includability of minor residential settlements along it into the heat supply;
- The present and future status and role of local boiler plants and remote-heating systems.

On the basis of the surveys and evaluations carried out, we reached the following conclusions:

- From the years 1987-1990 onward, the conditions will be favorable for meeting the full heating needs of the residential settlements of Nyitra, Leva, Verebely, Tolmács, and Aranyosmarót, and partially the needs of the industrial establishments, by means of the hot-water heating system based on the nuclear power plant;
- The heat demand of the local industry (in the form of steam) must be supplied by current boiler plants or boiler plants to be constructed later;
- Utilization of waste heat for intensive agricultural production is also feasible at a safe distance from the nuclear power plant, possibly via the cooling of the water in the return pipe of the remote-heating system, along the topographic line of the pipes;
- The boiler plants to be built in Nyitra and Leva must serve to supply steam since until the startup of the heat-supply system from the AEMO they must supply the heat demand of the local system with heat exchangers, while later they will be available to the local industry;



- We propose that all heating networks operate uniformly at the 150/70°C temperature level for the residential areas and their associated facilities. Three remote-heat pipelines would supply them: (I. AEMO - Nyitra - Verebely; II. AEMO - Léva; and III. AEMO - Aranyosmarot - Tolmács);
- A loop-pipe heat-supply system must be built in Nyitra; this could operate in parallel with the local boiler plants, and in peak periods with the AEMO;
- The full heat demand of the other settlements would be met with hot water from the AEMO; the existing and contemplated boiler plants would serve as reserve.

The charting of the heat demand represents the 1977 conditions, and shows the developments in heat demand until 2002 over a 25-year forecast period in five-year steps.

Because of the uncertainties in estimating the long-range heat needs of residential and industrial facilities, as well as because of the well-known difficulties of realization, we corrected the heat-demand figures downward in the groupings according to the individual heat carriers, using Table 1.

Table 1  
The factor used to correct the heat-supply demands

Coefficient	Heat-carrier medium	
	Steam	Hot water
Simultaneous	0.8	0.9
Realization	0.9	0.9
Long-range	0.75	0.7

Table 2 shows the heat requirement of the individual settlements and surrounding areas for 2000. The data represent values corrected as above. The table also shows the distribution of the available heat outputs according to their origins.

Accordingly, the full heat output in the area is 1,081.94 MW; of this, the central remote-heating system supplies 613.68 MW, the AEMO supplies 497.00 MW, and local boiler plants supply 116.68 MW.

The remaining 408.26 MW must be supplied directly by the boiler plants of the users.

Table 2. The heat demands in the heat-supply system of the AFND after correction

Settlement	Nyitra	Leva	Verebely	Aranyosmarot Tolmács	Total
From the central remote-heating system	387.30	104.38	39.00	58.00	25.00
					613.68
From local boiler plants	294.90	141.63	15.34	16.39	-
					468.26
Total	682.20	246.10	54.34	74.39	25.00
					1,081.94



Figure 1 illustrates the remote-heating system proposed for connection to the heat-supplying nuclear power plant in Mochovce.

Figure 2, as an example, illustrates the heat balance of Nyitra and the proposed means for meeting the demands of 2000.

Figure 3 shows the annual heat-demand content diagram assumed for Nyitra and Verebely in 2000.

The Remote Heat-Supply Pipeline Connecting Nyitra, Leva, Tolmace, and Aranyosmarot to the Heat-Supplying Nuclear Power Plant in Mochovce

Construction of the AEMO provides a satisfactory opportunity for meeting the present and long-range heat demands in the area, as well as their associated facilities, from the nuclear energy source. Now that the heat demands have been surveyed and evaluated, it is important to develop a proposal for the optimum heat transport between the power plant and the user area. To be able to accomplish this, it was necessary to determine the optimum topographic layout and the engineering solution, as well as the parameters of the pipeline system, considering the following factors:

- Once the AEMO has started up, the full heat demand must be supplied under constant parameters until at least 2000;
- There must be no significant environmental contamination (soil, water, air);
- It is advisable to utilize the existing and contemplated boiler plants efficiently;
- Temporary firing systems in the area must be eliminated;
- The area removed from agricultural use, including associated facilities for agricultural operations (pressure-increasing plants, their roads, electrical transmission lines), must be reduced to a minimum;
- Appropriate information must be submitted to the energeticists, the state administration authorities, and the industry to ensure the realization of a unified remote-heating concept;
- Information must be made available to the individual industry sectors (metallurgical and machine-manufacturing, construction) on the size of the needed capacities for the realization of the remote-heating pipeline system and its associated facilities.

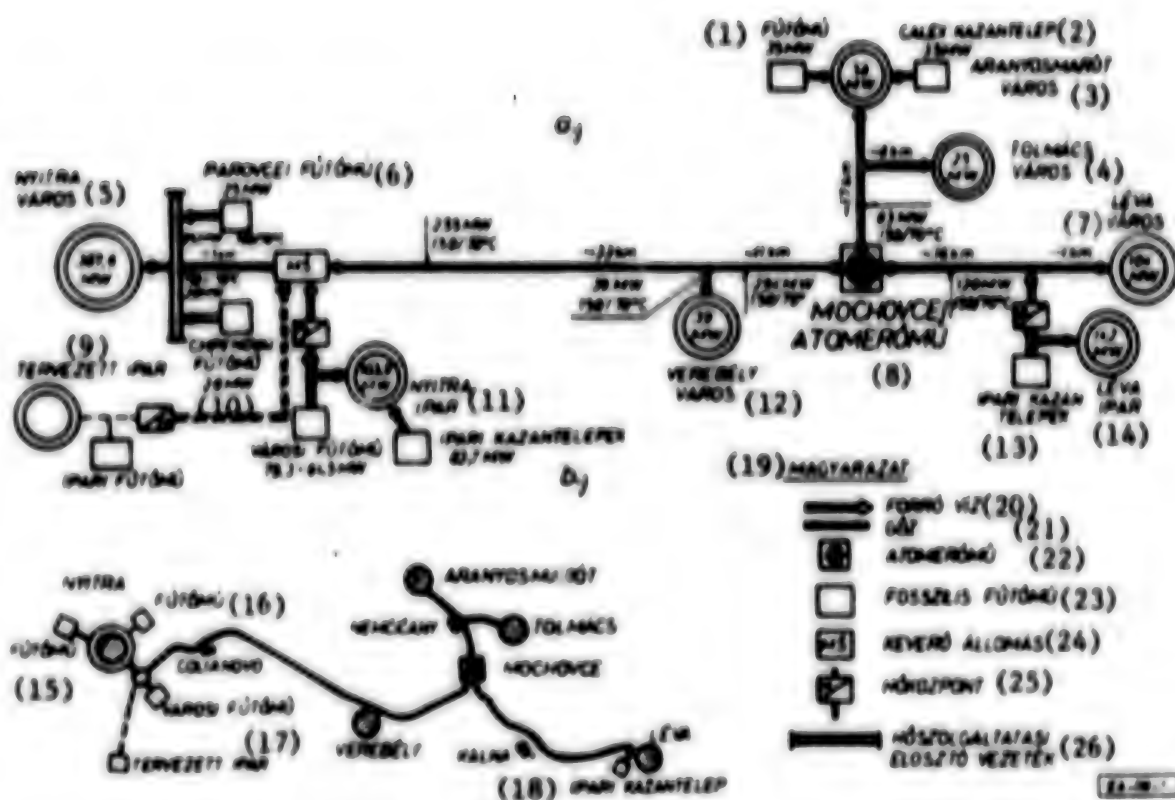


Fig. 1. The proposed scheme (a) and topographic layout (b) of the regional heat-supply system of the nuclear power plant in Mochovce

- |      |                                 |                                   |
|------|---------------------------------|-----------------------------------|
| Key: | 1. Heating plant                | 15. Heating plant                 |
|      | 2. Calex boiler plant           | 16. Heating plant                 |
|      | 3. Town of Aranyosmarot         | 17. Municipal heating plant       |
|      | 4. Town of Tolmács              | 18. Industrial boiler plant       |
|      | 5. Town of Nyitra               | 19. Explanations                  |
|      | 6. Parovce heating plant        | 20. Hot water                     |
|      | 7. Town of Léva                 | 21. Steam                         |
|      | 8. Mochovce nuclear power plant | 22. Nuclear power plant           |
|      | 9. Planned industry             | 23. Fossil heating plant          |
|      | 10. Chrenova heating plant      | 24. Mixing station                |
|      | 11. Nyitra industry             | 25. Heat center                   |
|      | 12. Town of Verebely            | 26. Heat-supply distribution pipe |
|      | 13. Industrial boiler plants    |                                   |
|      | 14. Léva industry               |                                   |

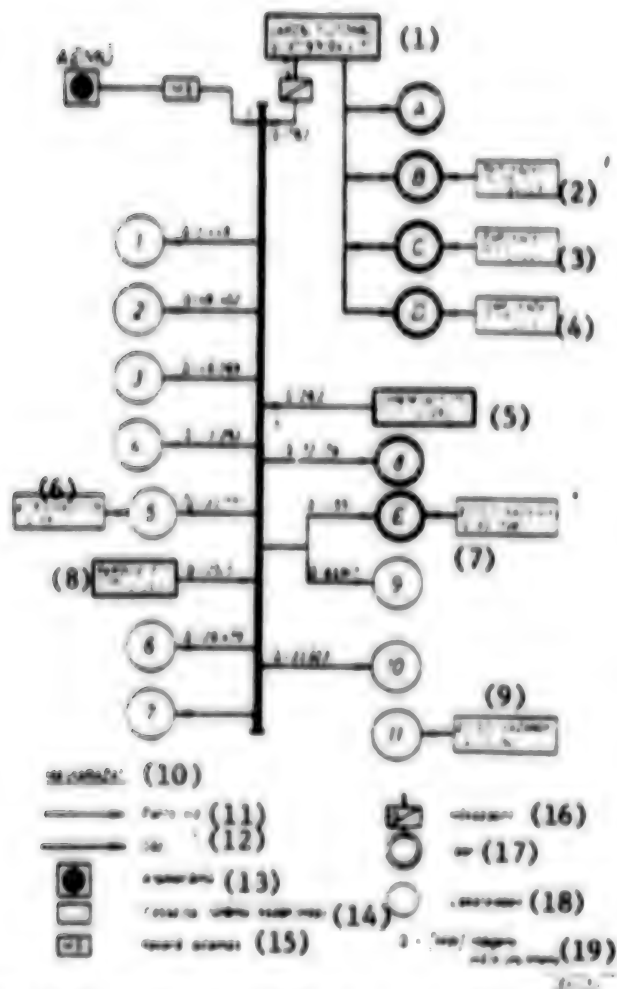


Fig. 2. The heat balance of Nyitra in 2000

- |      |                            |                             |
|------|----------------------------|-----------------------------|
| Key: | 1. Municipal heating plant | 13. Nuclear power plant     |
|      | 2. Industrial boiler plant | 14. Fossil heating plant    |
|      | 3. Industrial boiler plant | (boiler plant)              |
|      | 4. Industrial boiler plant | 15. Mixing station          |
|      | 5. Chrenova heating plant  | 16. Heat center             |
|      | 6. Individual boilers      | 17. Industry                |
|      | 7. Individual boilers      | 18. Residential settlements |
|      | 8. Parovce heating plant   | 19. Heat demand             |
|      | 9. Individual boilers      | Heat output                 |
|      | 10. Explanation            |                             |
|      | 11. Hot water              |                             |
|      | 12. Steam                  |                             |

Starting from the territorial and temporal structure of the area involved, it was found advisable to feed the heat output through the following three pipelines:

- I. Pipeline toward Nyitra and Verebely (Construction Stage 1);
- II. Léva pipeline (Construction Stage 2);
- III. Pipeline toward Aranyosmarot and Tolmács (Construction Stage 3).

The selection of the optimum solution represented optimization of the investment and operating costs under Czechoslovak conditions, based on 1978 prices. The calculations given represented the determination of the optimum pipe diameter and insulation thickness.

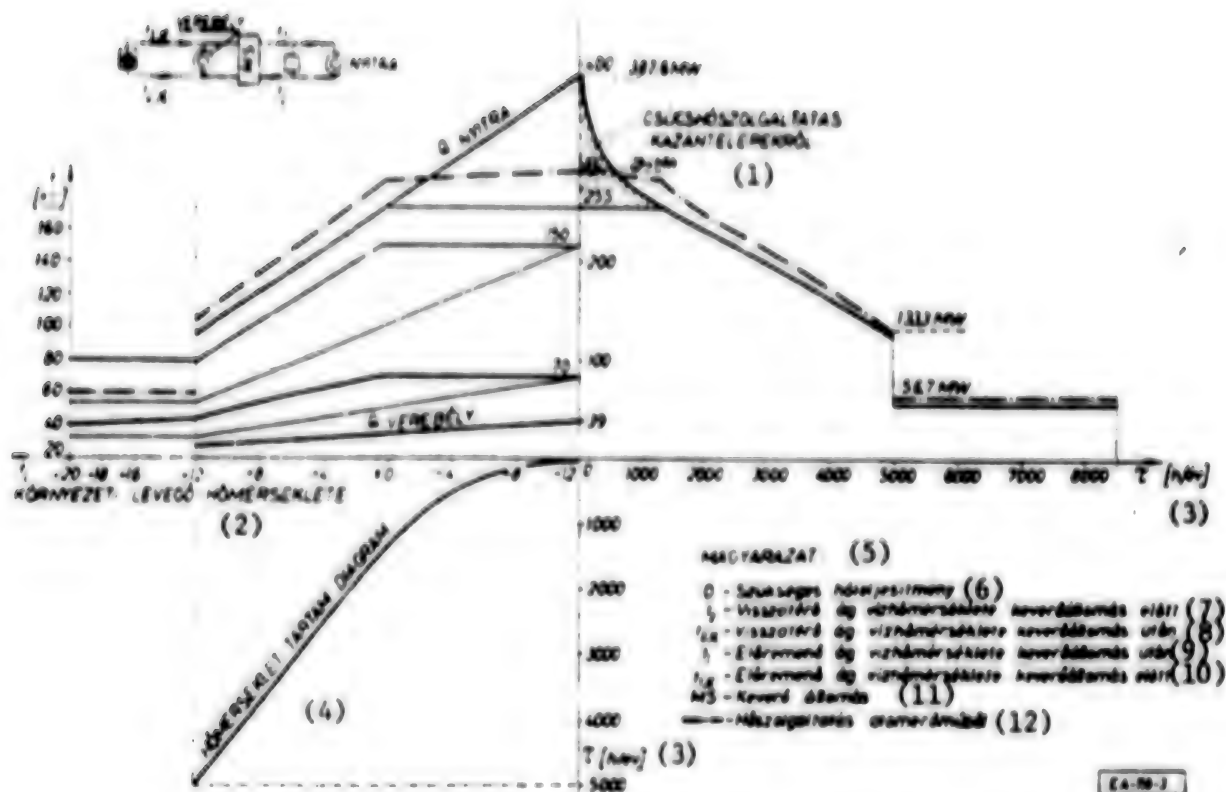
Optimization of pipe diameter was the minimization of that target function which considered

- the investment cost of the pipeline;
- the investment cost of the pressure-increasing plant;
- the engineering, repair, and personnel costs;
- the costs of pumping.

Optimization of the insulation thickness was carried out for different heat costs, considering the heat loss through the insulation and a comparison of the investment costs of insulations of different thicknesses on an annual amortization basis. The calculations were carried out with a computer, using the following limit values:

- The pressure level in the pipelines may not exceed 2.5 MPa;
- The sectionalization of the individual pipe layouts;
- Constant static pressure must be provided in the individual municipal heat-supply networks;
- The number of pressure-increasing pump stations must be minimized, and they must be deployed in accessible areas, close to electrical outlets.

Considering the above conditions and restrictions, we obtained the following parameters for the individual pipelines (given in Table 3):



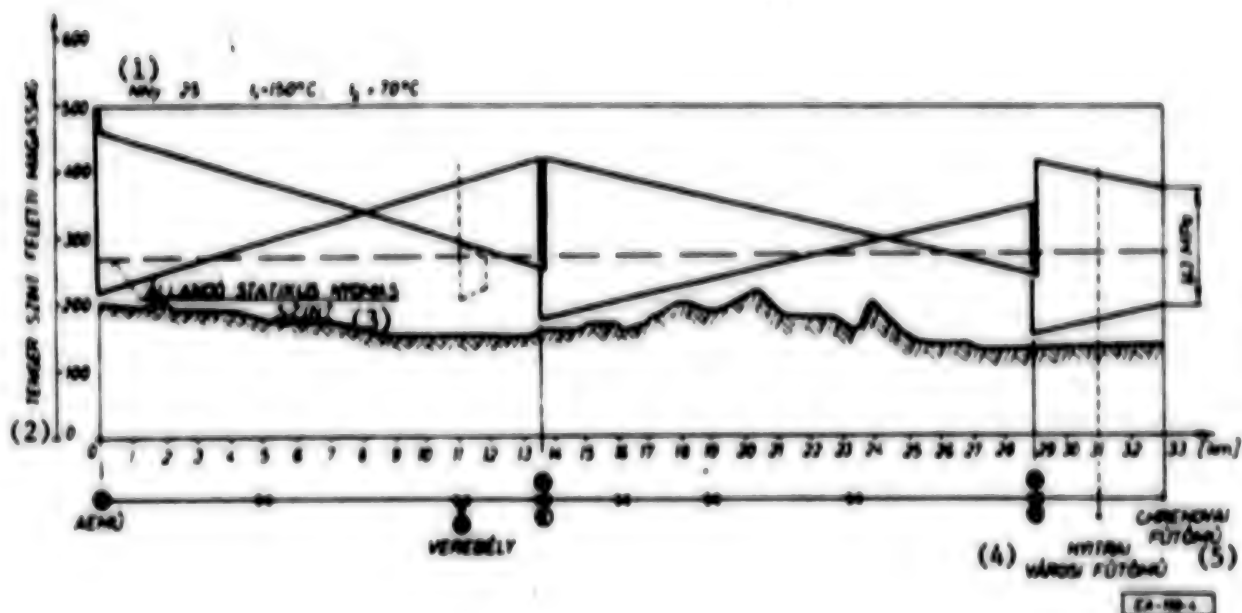


Fig. 4. Pressure diagram of Pipeline I.

Key: 1. Nominal pressure  
 2. Altitude above sea level  
 3. Constant static pressure level  
 4. Nyitra municipal heating plant  
 5. Chernova heating plant

To illustrate the technical solution, we present the pressure diagram of Pipeline I (AEMO - Nyitra - Verebely) in Fig. 4, the ambient temperature dependence of the water quantity of the mixing station in Nyitra (Fig. 5), and the topographic map of Pipeline I (Fig. 6).

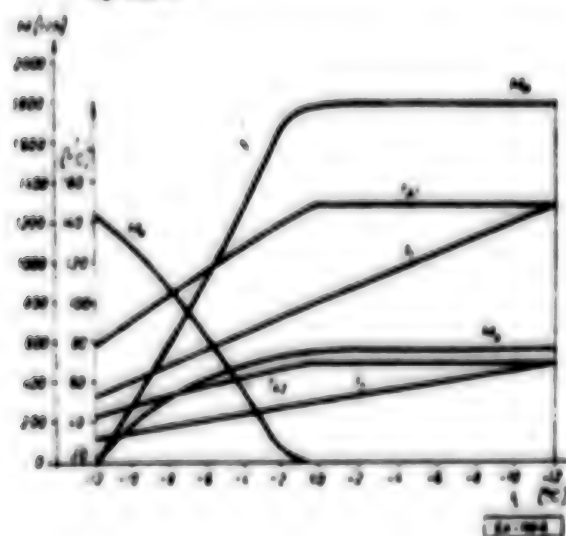
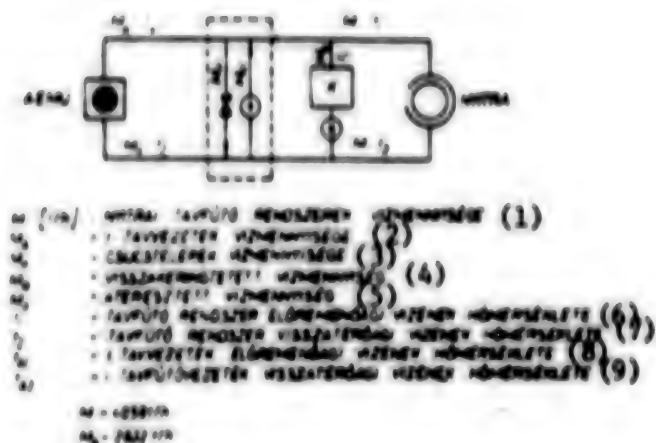


Fig. 5. Temperature dependence of the water quantity of the mixing station in Nyitra

- Key:
1. Water quantity of the remote-heating system in Nyitra
  2. Water quantity of Pipeline I
  3. Water quantity of the peak plants
  4. Recirculated water quantity
  5. Water quantity passed through
  6. Temperature of the forward-branch water of the remote-heating system
  7. Temperature of the return-branch water of the remote-heating system
  8. Temperature of the forward-branch water of Pipeline I
  9. Temperature of the return-branch water of Pipeline I





Fig. 6. Topographic map of Pipeline I

#### Supply of the Heat Output of the Nuclear Power Plant in Mochovce to the Heat-Supply System

We assume that the System Skoda K-220-44/300 type condensation steam turbine will be tapped to obtain the heat output earmarked for heat supply. The heat scheme illustrated in Fig. 7 shows the method of taking the heat output and the configuration of the second radiation-protection barrier.

Figure 8 illustrates the connections of the individual pipelines and turbo machines. This figure shows the heat scheme of the nuclear power plant in Mochovce. Pipeline I is connected to Reactor Blocks 1 and 2; Pipelines II and II are connected to Reactor Block 4. Reactor Block 3 performs reserve functions.

The pressure level of the circulating water of the pipeline system is higher than the heating-steam pressure; this serves as the second radiation-protection barrier.

Figure 9 illustrates the annual electric-power production content diagram next to the heat-transport content diagram assumed for Pipeline I (Fig.3) for 2000.



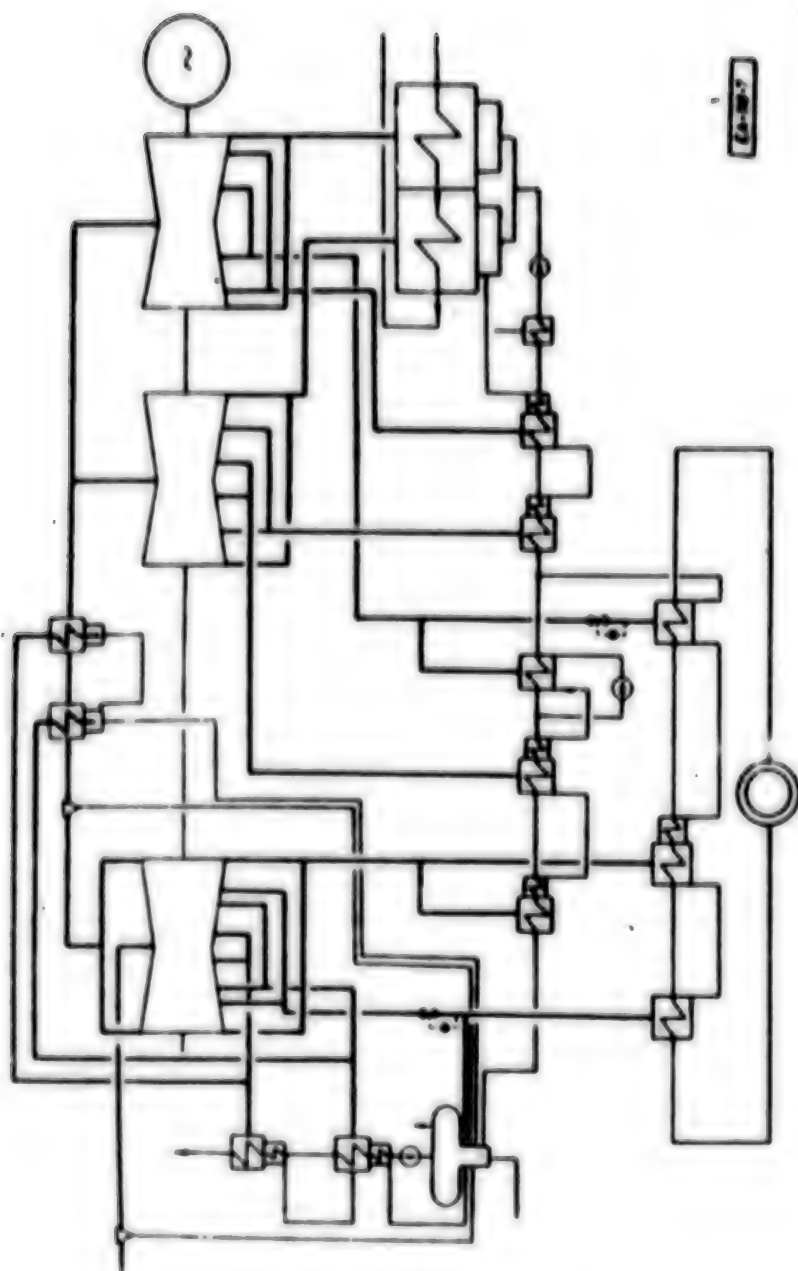


Fig. 7. Heat scheme of the heat-supplying turbine

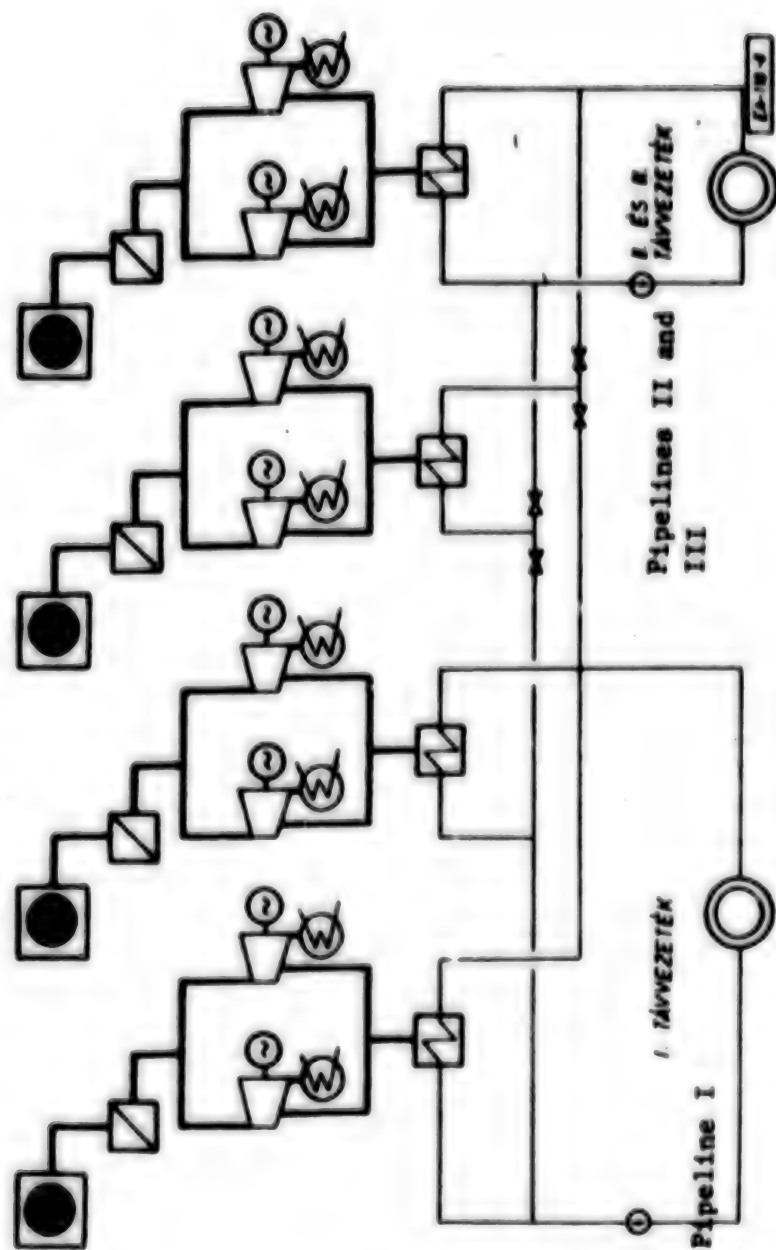


Fig. 8. Diagram of the heat supply from the nuclear power plant in Mochovce

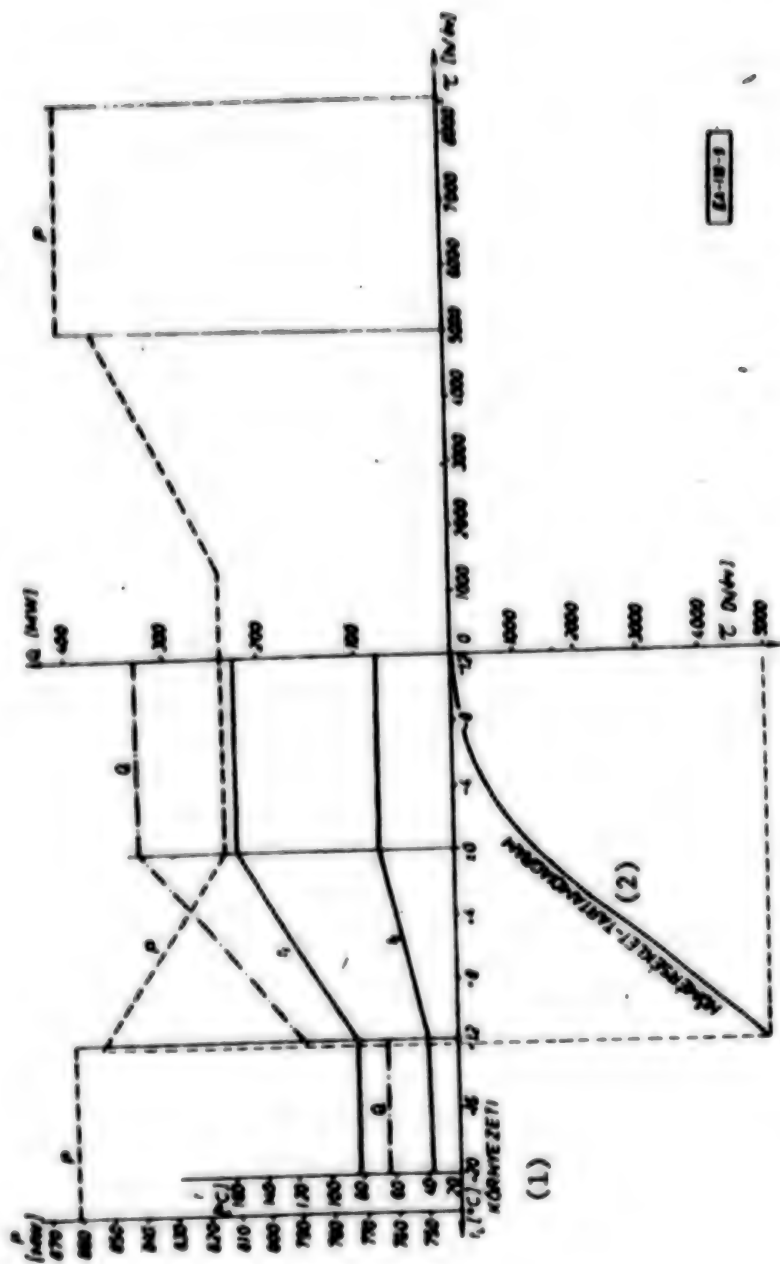


Fig. 9. Electric power supply content diagram for 2000 with Pipeline I in operation

Key: 1. Ambient

2. Temperature-content diagram

Table 3. Parameters of the planned remote-heating pipeline

Pipeline	I Myitra, Verebely	II Leva	III Aranyosmarot,, Tolmács
Maximum output transported (MW)	294.0	104.4	83.0
Number of pipes and nominal diameter	2 x 700	2 x 400	2 x 350
Thickness of insulation (mm)	180	150	150
Length of pipe (km)	33	16.4	17.4
Number of pressure-increasing stations	3	2	2
Nominal pressure	25	25	25
Annual heating output (TJ/year)	4741.8	1250.0	994.8
Annual degree of utilization of the output maximum (hrs/year)	4476	3330	3330
Energy-economic coefficient $\alpha_h$	0.689	1	1
Heat-carrier medium, pipeline system	Two-pipe, hot water		

Table 4. Parameters of the remote-heating system

Parameter	Dimension	P i p e l i n e			Total system
		I	II	III	
Heat-carrier medium					
- temperature step	°C/°C	150/70	150/70	150/70	150/70
- nominal pressure	MP	25	25	25	25
Number and diameter of pipes	No. and	2x700	2x400	2x350	-
Length of pipeline	km	33.0	16.4	17.1	-
Weight of pipes used	10 <sup>3</sup> t	11,081	2,705	2,770	16,556
Insulation thickness	mm	180	150	150	-
Number of pump stations	No.	3	2	2	-
Static pressure level relative to the level of the Baltic Sea	m	270	230	approx. 230	-
Pressure differential	MPa	1.43	1.37	0.82	-
Total pressure loss in the forward and return branches	MPa	6.058	5.219	4.37	-
Heat loss					
- during heating season	TJ/year	168.812	62.156	58.618	289.586
- during the summer	TJ/year	63.062	23.222	21.902	108.186
- annual total	TJ/year	231.876	85.378	80.520	397.772

[Continued on next translation page]

[Table continued from preceding page]

Average temperature drop	°C	3	1.5	1.5	6.0
Heat loss of the pipeline at an ambient temperature * of -1.9°C	MW	0.142	0.105	0.095	0.342
Pump output at maximum heating output	MW	9.540	3.078	1.623	14.250
Output decrease of the nuclear power plant	MW	56.92	34.84		91.76
Total electric power output loss (nuclear power plant plus pump output)	MW	66.469	39.541		106.01
Assumed investment cost (total)	10 <sup>6</sup> Kcs	553.7	215.0	190.4	959.1
- pipeline	10 <sup>6</sup> Kcs	460.0	135.8	120.0	715.8
- pump station	10 <sup>6</sup> Kcs	93.7	79.2	70.4	243.3

\* Annual average atmospheric temperature

Table 5. Technical and economic parameters of remote heating from the nuclear power plant in Mochovce

Parameters of the regional heat-supply systems	Settlement					Total system
	Nyitra	Verebely	Léva	Aranyosmarót and Tolmács		
Maximum heat demand	MW	387.6	39.0	104.4	83.0	614.0
Max. heating output of AEMO	MW	255.0	39.0	104.4	83.0	481.4
Other heat suppliers	MW	132.3	-	-	-	132.3
Total annual heat supply	TJ/yr	4503.6	439.8	1250.4	994.8	7188.6
Annual heat supply of AEMO	TJ/yr	4302.0	439.8	1250.4	994.8	6987.0
Other heat suppliers	TJ/yr	201.6	-	-	-	201.6
Energy-economic co- efficient $\alpha_h$	-	0.658	1	1	1	0.784
Heat-supply coefficient $\alpha_r$	-	0.955	1	1	1	0.9719
Maximum output-utiliza- tion degree (annual) $\tau_c$	h/yr	3227.5	3132	3330	3330	3249
Annual utilization degree of AEMO $\tau_{AEMO}$	h/yr	4686.3	3132	3330	3330	4026



The study also includes the water-replenishment method for the full AEMO remote-heating system. However, the space available for this report precludes its description in detail.

#### Summary of the Results of the Study

The findings of the study indicate the feasibility and cost effectiveness of the implementation of remote heating from the nuclear power plant in Mochovec, now being planned, using Type VVER 440 reactors. The system would supply the needs of Nyitra, Léva, Verebely, Aranyosmarót, and Tolmács with three pipeline branches, using the 150/70<sup>0</sup> hot-water system.

The dual-block layout of the four Type VVER 440 reactors permits the removal of the required heat output by tapping the 220 MW Skoda turbines, while maintaining the required degree of radiation safety.

Supply of 481.4 MW heat causes a loss of 91.6 MW electric output when the AEMO is operated. Thus, the electric output not fed to the network represents a heat output of 5.255 MW. Assuming that the thermal efficiency of the purely condensational operation of the AEMO is  $\eta_{ck} = 0.30$ , the combined heat and electric power generation improves the thermal efficiency to  $\eta_{cT} = 0.376$  (if the heat supply is 481.4 MW).

Under these conditions, and assuming maximum heat output, the fuel saving of the combined electric-power generation is 296.4 MW, meaning 36.4 ETA, compared to simple condensation operation. This is a major fuel saving, especially if we also consider the heating output of 481.4 MW.

Finally, in Table 5, we present the major technical and economic parameters of the proposals of the study.

2542

CSO: 5100

## COBOEN GEOLOGICAL PROSPECTING SHOWS POSSIBLE URANIUM FIND

La Paz PRESENCIA in Spanish 20 Nov 80 p 9

[Text] The Bolivian Nuclear Energy Commission [COBOEN] conducted prospecting operations during the last 4 months in a 4,900-square-kilometer area of the Altiplano Norte and the Sub-Andino Central, Edgar Pardo Leyton, head of the department of Radioactive Raw Materials of COBOEN, told PRESENCIA.

The prospecting operations in the zones called "morphostructures" are done to select "minor units" to locate radioactive materials.

This technique is used to cut the high costs of prospecting in every region of Bolivia.

COBOEN's studies of the morphostructural units reveal the possible existence of uranium ore, and what uranium-bearing patterns the deposits may have.

### Programs

The Department of Radioactive Raw Materials of COBOEN works out a plan to meet its goals, which are prospecting, exploration, evaluation, preparation, and mining, and uranium metallurgy, that is, all activities from the search for uranium to the production of commercial uranium concentrates.

Within Subprogram 2 was the selection process for minor prospecting units in the Altiplano Norte over an area of 4,000 square kilometers. The same thing was done in the Sub-Andino Norte over a 900-kilometer area.

A geological survey was also done of the Mina Cotaje deposit, including geology, radiometry, and sampling from 20 to about 120 meters deep.

The geological sections were determined between the Mina Amistas and Cotaje sectors, to determine the correlation of Tertiary and Cretaceous units which are of interest in order to define possible continuation of uranium mineralization in that sector.

Subprogram 3--the exploration, evaluation, and working of Mina Cotaje--included all combinations of operations for evaluation, plans for open-pit mining, assistance and supervision of mining operations for working Mina Cotaje.

Subprogram 4 deals with the Mina Cotaje uranium concentrate plant. In the past 4 months, complementary projects were done on the uranium concentrating plant.

Production was begun on the first kilos of commercial concentrate of uranium with a grade of between 60 and 70 percent uranium oxide.

The head of the Department of Radioactive Raw Materials said that the shortage of sulphuric acid in Bolivia is hindering "the start of uranium ore concentrating operations."

He added that because of that, the metallurgy technicians have suggested to the COBOEN board of directors that metallurgical treatment at Cotaje be temporarily halted.

#### Program for 1980

The 1980 program has not been completed because of budgetary limitations facing COBEN, according to Pardo.

The work done cost 430,000 Bolivian pesos, which were distributed by the national general treasury.

COBOEN planned to do aerial prospecting on the Morococala Plateau, with the financial aid of the treasury and the International Nuclear Energy Organization, which was to supply equipment, experts and training of Bolivian technicians. Aerial and geo-chemical prospecting were also to be done in the Sub-Andino Central.

#### Possibilities

Studies done by COBOEN showed that 700,000 square kilometers of Bolivian territory may have deposits of radioactive minerals.

After 10 years of work, 70,000 square kilometers, or 10 percent of the total, were explored.

COBOEN authorities reported the need to invite foreign companies to invest risk capital in the geological prospecting of these areas. Otherwise, they added, it would take 1,000 years to verify the existence of those minerals.

8587

CSO: 3010

ATOMIC WEAPONS RACE SPREADING TO MIDDLE EAST

Dangers of Atomic Weapons

London AL-HAWADITH in Arabic 23 Aug 80 pp 17,18

[Article: "Mr Giscard: What If Iraq Makes an Atomic Bomb?"]

[Text] The recent conference to review the Atomic Weapons Limitation Treaty coincided with an extensive propaganda campaign against Iraq's nuclear program. The secretary general of the United Nations, Dr Kurt Waldheim, took advantage of the 4-week meeting in Geneva to write a letter to all UN representatives in which he cautioned against the increasing danger of nuclear weapons proliferation, and emphasized the urgency of finding a solution to the problem. To dramatize his point, Dr Waldheim invited the director general of the International Atomic Energy Agency, Professor Siegfried Eichland to show a film of an atomic bomb explosion. His motive: to show the world the destructive capacity of nuclear weapons and enlist support against their spread.

The conference coincided with a strange development. Instead of the usual Israeli campaign against the Iraqi nuclear program--or any similar Arab program--

Iran emerged as the most vehement opponent of Iraq's nuclear development efforts. An Iranian group calling itself the 'Organization to Defend the Islamic Republic' is reportedly pursuing French scientists who work on the Iraqi nuclear project. This development has prompted the French Government to take extraordinary measures to protect its scientists. The Iraqis claim that the joint Israeli-Iranian campaign against their nuclear program is neither a coincidence nor a surprise, but is something to be expected. By lumping the Iranians with the Israelis, the Iraqis appear determined to discredit the new Iranian regime.

In a satirical commentary inspired by the Iranian anti-Iraqi campaign, the JERUSALEM POST published a caricature showing President Giscard d'Estaing being interviewed by a television reporter.

[Reporter] Mr Giscard, what if Iraq makes an atomic bomb?

[Mr Giscard] Then the Iranians will view that as a threat to them. Tehran will then seek to buy atomic bombs.

[Reporter] What then?

[Mr Giscard] Well, ah, ah, ... I think that in all likelihood we will reach a reasonable agreement.

The caricature is capable of two interpretations:

either France is trying to urge Iran to resume its nuclear program, which was halted when the Shah was ousted from power, or France is convinced that nuclear balance is the only means to insure stability in the region [the Middle East].

Among the reasons for the apparent lack of cohesion within the anti-nuclear movement is France's position within the "nuclear club" as a non-signatory of the nuclear non-proliferation treaty. This discrepancy, and the fact the France supplied Israel with the Dimona nuclear reactors, undermines the effectiveness of Israel's anti-nuclear campaign. France, furthermore, is the only country which claims to know for certain that Israel possesses nuclear weapons.

As things now are, the situation is like this: Iraq is a non-nuclear nation and a signatory of the nuclear non-proliferation treaty; it is seeking to acquire a nuclear capacity. Israel, on the other hand, has a nuclear capacity, is not a signatory of the non-proliferation treaty, and opposes international inspection of its Dimona reactors. France, a nuclear power and nonsignatory of the non-proliferation treaty, is helping a nonsignatory government to acquire a nuclear capacity.

According to a report by the science editor of London's FINANCIAL TIMES, France is acting responsibly. The report opens with a statement attributed to an official of France's ministry of industry, who claims that "membership in the nuclear club is no longer open." The nuclear club includes the United States, the Soviet Union, Britain, France, and China. The French official's claim is supported by reference to the reaction of the nuclear club members to India's atomic explosion in the early 70's.

The Indian explosion, according to the British editor's report, caused France in the mid 70's to change its position on non-proliferation. Before that, France reportedly did nothing to discourage other nations from acquiring nuclear weapons. It did not take part in any debate on non-proliferation, including the one on the non-proliferation treaty itself. Subsequently, however, France did participate in the so-called London Club discussions sponsored by a group of countries engaged in the export of nuclear technology. As a result of those discussions, France decided not to supply Pakistan with advanced nuclear equipment. While still refusing to sign the non-proliferation treaty, France's present policy is to refrain from the sale of nuclear equipment to any country without the approval of the International Atomic Energy Agency.

For this reason, France is angered by the Israeli propaganda campaign, particularly in view of the fact that the International Atomic Energy Agency has approved the sale of nuclear reactors to Iraq. Another factor contributing to France's ire is the fact that Israel continues to decline to sign the non-proliferation treaty while Iraq has already done so. "Even the United States," according to the science editor of the FINANCIAL TIMES, "which for 4 years under President Carter has worked hard to push the treaty, appears unperturbed by the French-Iraqi deal."

For their part, the Iraqis insist that their nuclear program is for peaceful purposes only, and that the international agreements [regulating the sale of nuclear equipment



and fuel) to which the Iraqis have agreed will serve as a sufficient guarantee. It is interesting to note in this connection that the U.S. Congress is now debating whether to follow through on President Carter's promise to supply India with uranium. Some members of Congress suspect that India will use the uranium to produce weapons. Their skepticism has been strengthened by the fact that Pakistan is about to produce its first atomic bomb. Jonathan Bingham, a democratic congressman from New York state, scoffs at the term "useful purposes," which is often used to justify the sale of nuclear fuel. He maintains that a nuclear explosion [the correct term is chain reaction] is the same whether used for peaceful or military purposes. Explaining his position further, Mr Bingham asserted that while he does not accuse India of seeking to produce atomic weapons, he was, nevertheless, critical of his country's permitting India to ignore international regulations regarding the use of nuclear fuel. "That attitude," he continued, "is bound to encourage other nations to go ahead with their atomic weapons programs." As Mr Bingham sees it, the problem goes beyond the mere question of U.S.-Indian relations.

Even though what the congressman says about India does not apply to Iraq--many of his colleagues are opposed to the Iraqi deal only as a gesture of support for Israel. All propaganda aside, the American establishment [Government] has its own explanation for the reasons prompting Iraq to push ahead with its nuclear program. The predominant view is that Iraq is not in the best position for a confrontation with Iran or with Israel. To strengthen its position, according to this view, Iraq needs a distinction of some type, and no distinction is better than possessing an instrument of extraordinary power. While the fear associated with the spread of nuclear weapons is nothing new, the present situation, according to the American view, is different. The reason behind the new fear is not related to the Iraqi program as such, although propaganda would make it appear to be that way. The actual reason has to do with the oil and energy crises. All countries are scrambling to insure their future energy supplies, and nuclear energy is seen as one of their best options. The race is therefore on--and the door is wide open--to hit two birds with one stone: insure energy supplies and produce atomic weapons.

The furor against the Iraqi nuclear program is especially loud because Iraq is in the Middle East and the Middle East is not far from explosion. Despite the fact that much of the furor emanates from Israel--and Iran, lately, to some extent--responsible circles throughout the world blame the situation on Israel for having begun the nuclear race and for having introduced nuclear weapons to the region.

In an introduction to a book published by the [London] Institute for Strategic Studies the authors have this to say about Israel's present options and future strategy:

At a time when the danger of the spread of nuclear weapons is causing great anxiety about the future, the nuclear non-proliferation treaty notwithstanding, there is little doubt that the Middle East is the most sensitive and dangerous region on earth. The region consists of a number of small countries with limited capacities and resources, currently engaged in a sharp conflict that remains essentially a local one. But despite the fact that mankind faces more potentially devastating dangers--the possibility of a nuclear confrontation between India and China, for example, or among the superpowers over permitting Germany to acquire nuclear weapons--the Arab-Israeli conflict, from the inception of the Jewish State, has been characterized by an ever present potential to envelop the region in a nuclear face-off. The probability that such a confrontation will take place is increasing.

If, as is believed, the countries of the region are engaged in local production of nuclear weapons, the stimulus for such activity is traceable to the existence of a small, but advanced, nuclear capacity in Israel, one that has a significant military potential, all official protestations to its peaceful intentions notwithstanding. The fear that this capacity engenders is due in great measure to the nature of the Israeli nuclear program, the kind of facilities it employs, and the high secrecy that surrounds the whole affair. A second contributing factor is that Israel is constantly beset with dangers to its security.

All arguments to the effect that it is neither necessary nor rational to introduce nuclear weapons in the Arab-Israeli confrontation aside, the one certain fact of life in the Middle East is that Israel has created and developed a nuclear military option, and that the only practical use of its nuclear facilities is the production of plutonium, the key component of nuclear weapons. Whether the production of plutonium is the principal goal of Israel's nuclear program or merely a secondary benefit is beside the point. The fact remains that there is an intimate connection between a country's scientific and technological capacity and its ability to produce weapons of modern war. This central fact and the possibility that these resources could be diverted to military use cannot be ignored. All agreements, guarantees, and claims that a country's intentions are peaceful notwithstanding, the fact remains that a nuclear reactor used for the generation of electricity and heat could, at little additional cost, be turned into a facility for the production of fuel for weapons of mass destruction. And herein lies the greatest danger of nuclear proliferation.

The irony of the present situation is that the Israeli argument against the Iraqi nuclear research program is precisely the same one once used against Israel's. (For further information on this point, the reader is urged to read the article by a University of Tel Aviv physicist, which appears later in this paper.)

Egypt's decision to end its conflict with Israel has so weakened the Arab alliance that a reasonable solution on the Eastern front is less likely. There simply is not sufficient military strength to end the Israeli occupation. At best, Syria's call to create a strategic balance based on traditional weapons might deter Israel from further aggression or deprive it from a decisive victory in a future conflagration. Experts on the Middle East now are convinced that the only balance that is capable of compelling Israel to withdraw from occupied Arab territory, as well as convince the Arabs that Israel cannot be eliminated, must be based on nuclear parity. This, the experts agree, is the only way to bring about an internationally acceptable solution.

The issue of nuclear parity, however, is not free of complications. Iraq's distinction as the first Arab nation with a nuclear program is bound to give it an extra political clout. This prospect is a cause for concern among its Arab neighbors. They will have two options: either surrender military and political leadership to Iraq, or live with the possibility of having that country interfere with their internal affairs to impose its leadership role upon them. The consensus of opinion among Iraq's neighbors is that he who wields the ultimate weapon will be able to maneuver things to his own advantage.

Based on this reasoning, Western diplomats and military experts see in the Iraqi development a danger of pitting Arab against Arab in a confrontation that is no less ominous than the one pitting Arabs against Israel. This potential development on the



international scene has been underacored by the French scientist Francis Perin. (See his article in a later part of this paper.) Perin is dismayed over the possibility that Iraq--a backward, undemocratic and unstable country, as he describes it--should come to have a nuclear punch.

In addition to Perin, others have criticized France for dealing with Iraq as though it were another Western democracy. These critics expect the Iraqi nuclear program to be a recipe for instability in the region. Iraq's neighbors, the critics argue, will feel threatened, and Iraq may be tempted to force these countries to tow its political line or annex them outright. The Israelis point out that if this is America's understanding of regional stability, then America has already accepted the inevitable fact of Iraq's dominance over the Gulf and Syria in exchange for Iraq's pledge to insure the West's oil supply and to keep the Soviets at bay. Another implication, according to the Israelis, is that America has finally agreed to impose on Israel a solution to the Palestinian issue.

Based on this analysis, observers in Western capitals see in the joint Israeli-Iranian opposition to Iraq's nuclear effort a development of far-reaching implications. While they admit that the opposition is not coordinated, they emphasize that it is realistic. The Israelis are anxious to defend their gains on the Eastern front; the Iranians are equally anxious to keep Shatt al-Arab and the Gulf under their control.

Other French critics question another aspect of the stability issue. What would France do, they ask, in the event the present Government of Iraq is toppled or replaced by a less reliable one? How will France react to civil upheavals in Iraq and the possibility that nuclear facilities might fall under the control of a less dependable group? These critics claim that all autocratic governments are susceptible to civil war. They argue that this being the case, the nuclear capability that France helped to create in Iraq will never be completely secure, all guarantees notwithstanding. Strangely enough, however, the Israelis who also share this view find themselves defending the Soviet Union which, like Iraq, is governed by a non-democratic government, amply supplied with nuclear weapons and facilities. Professor Niman of Israel told *Yadiot Ahranot* that "the Soviet Union has demonstrated a unique responsibility in disseminating and exporting nuclear know-how and technology." When asked whether the availability of nuclear weapons to Iraq would create a balance of terror similar to the one that exists among the superpowers his answer was an emphatic yes. According to Niman, the great powers are responsible and can keep the lid on that balance. In one sentence, the professor managed to divide the world into responsible and irresponsible nations.

This strange scenario, which compelled France to send an official delegate to Israel to investigate that country's furor over the Iraqi-French agreement, finds Israel ready to accept to live with this balance of terror provided Iraq is pronounced a responsible country! Only such a declaration could save France the need to justify its position.

#### Interview With General Hackett

London AL-HAWADITH in Arabic 23 Aug 80 pp 19,20

[Text] Nuclear proliferation is currently the focus of a worldwide debate. In particular, Iraq's entry into the nuclear arena together with Israel's established

nuclear capacity add another dimension to the Middle East crisis. A new solution based on nuclear parity appears to be emerging. In this special issue AL-HAWADITH sought the opinions of one of Britain's most famous military men, the former commander of Britain's NATO forces, General Hackett. He is the author of "The Third World War," in which he discusses the problem of nuclear proliferation in the Middle East. General Hackett is also a former deputy chief of staff of Britain's armed forces.

[Question] A great number of experts view Israel's nuclear capacity as a decisive military factor in the Middle East. Should the effort to find a peaceful solution fail, as has the effort to resurrect the Camp David accords, do you believe that atomic weapons will play a fundamental and central role in the Middle East conflict, either in an actual war situation or one in which the threat of war is used?

[Answer] I will not go that far, but I do think that it will be an important factor. I also hope that things will come to that. I view Israel's nuclear capacity as a very important factor, but not necessarily a decisive one. For as long as Israel is bound to the United States, it will not have full freedom of action, especially in a matter of such importance as the use of nuclear weapons. As I see it, then, Israel's nuclear capacity is an important but not a decisive factor.

[Question] Does Israel need atomic weapons?

[Answer] The question as to why any country needs a military capacity may be answered simply by the fact that each country needs to defend itself, the best way it can. True, however, Israel has only a limited defense responsibility and not a general one. Furthermore, the Israeli Army can handle that responsibility in the war it might have to fight. Most countries prepare themselves for a general defensive war. Israel, on the other hand, prepares itself for a limited situation. Based on this, it is logical and reasonable for countries preparing for general war to equip themselves with all the weapons they need and expect to use. As for Israel, the situation is different. That country's defense problems are limited and are premised on a war with its Arab neighbors. What, then, is the need for nuclear weapons? Obviously Israel expects to use these weapons in a future war with the Arabs. But Israel will not act alone. It is dependent on the West, especially the United States, and I cannot imagine Israel resorting to nuclear weapons without permission from the United States. Furthermore, I do not believe the United States will permit that. The United States needs [Persian] Gulf oil and will not permit Israel to use a weapon of this type. I do not, therefore, view Israel's nuclear capacity as a direct and immediate threat to her Arab neighbors.

[Question] Some of America's military men and politicians insist that the most important thing is oil. They maintain that the flow of oil could be maintained even in the event of small wars in the region. It seems that they care more about oil than people. Any comments?

[Answer] I said earlier that as long as the United States is dependent on Middle East oil it will not permit Israel to use nuclear weapons, for the moment it does, the oil will dry up.

[Question] Why will the oil dry up?

[Answer] Because I cannot see Saudi Arabia, Kuwait, the Emirates or any other nation selling oil to the Americans if Israel uses nuclear weapons against the Arabs. Israel now cannot undertake any military action, with or without nuclear weapons, without first consulting the United States. There will be a new situation in November, when a new president will be elected. The importance of the Jewish vote, especially in New York, will diminish. After November, the United States will be able to re-view, the Arab-Israeli conflict more realistically.

[Question] Are you saying that the Arab voice will gain at the expense of the Jewish one?

[Answer] I am saying that any move favorable to the Arabs by the candidates will cost them Jewish votes. But after the elections, the Palestine issue will return. Israel will have to make acceptable concessions to the Arabs in the Palestine problem.

[Question] Having done military service in the Middle East, you know the region very well. Should Israel decide to use nuclear weapons, what military strategy would it follow?

[Answer] I have no idea. I cannot answer this question. I'd need many more details to give a correct answer.

[Question] But in your book "The Third World War" you assumed--among other things--that war could begin in the Middle East.

[Answer] It is possible as I said earlier that Israel could be kept neutral. When I wrote my book, President al-Sadat was visiting Israel. I was not ready at the time to make any assumptions that might complicate his mission. I did assume, however, that in the event of war between the two superpowers Israel's neutrality could be guaranteed by the United States and the Soviet Union. But, of course, many things have happened since, and Israel must now be made to understand that it must offer concessions, especially with respect to Jerusalem. Jerusalem cannot be the unified capital of Zionist Israel.

[Question] What makes nuclear weapons a deterrant weapon or, at least, a decisive weapon in general?

[Answer] Fear that the weapon might be used. But I don't see a nuclear war breaking out, at least not in the near future. The Soviet Union and the United States have the largest nuclear arsenals on earth. They will continue to cooperate in avoiding a world-wide catastrophe. After 1985, however, some Middle Eastern countries, Iraq, for example, and some [Latin] American countries will have nuclear weapons. The world will face a difficult period in the 90's.

[Question] Why, then, do the Western powers try to prevent Iraq from possessing nuclear weapons?

[Answer] First, it has always been difficult to determine what the Iraqis want or do not want. Secondly, they do not need atomic weapons. If they claim they need atomic energy for peaceful purposes, one can say that they have an enormous amount of oil. The whole world does not wish to see Iraq or any other country possess an atomic capacity.

[Question] "Oil is too valuable to burn," the former Shah of Iran used to tell a quiescent West. The Shah was on his way to obtaining a nuclear capacity without any objection or token resistance from the West. Why then the furor over Iraq and earlier over Pakistan?

[Answer] Iraq's oil is enough for another 25 years, at least. Iraq does not need atomic energy. Israel has no oil.

[Question] Do you really believe this? Is it not more correct to say the West supports Israel and opposes Iraq, which, unlike the Shah's Iran, is not tied to the West?

[Answer] You say Iraq's oil will not last forever, and that Iraq will need to supplement its energy resources with atomic energy. Very well. If we are talking about peaceful applications of atomic energy, then Israel, not Iraq, needs atomic energy. But if we are talking about weapons, then Iraq will use its atomic energy as a weapon only.

[Question] Even in the case of weapons, can we not say that Iraq, an Arab nation, needs atomic weapons because Israel has such weapons?

[Answer] I do not wish to go into details that might spoil this simplistic view.

[Question] The experts tell us that the same nuclear reactors can be used for peaceful as well as military purposes. Having nuclear reactors and the technical skill to operate them would ultimately lead to the production of weapons. This is applicable to Israel or any other nation. When Israel, like India, first imported nuclear reactors, it was for peaceful purposes.

[Answer] I did mention earlier that the Israelis developed whatever nuclear capability they started with. But I maintain that they will not use atomic weapons without a green light from the United States and the West. This is not true of Iraq.

[Question] Have nuclear weapons rendered conventional weapons obsolete, or, more precisely, can wars be won using nuclear weapons only?

[Answer] No. To win a war one must use armies and not rely on the destruction brought about by nuclear weapons alone. Nuclear weapons cause devastation, but they must be followed with infantry. To use nuclear weapons without follow-up by men is to seek destruction for its own sake. The Soviets used to say that all [future] wars would begin with the use of nuclear weapons. Now they say that wars must begin with conventional weapons and maintained with conventional weapons as long as possible. The Americans agree. It is absolutely essential that a war launched with conventional weapons be terminated in the same way.

[Question] Do you believe, then, that Israel will refrain from exercising its nuclear option in exchange for American aid? Would this not ultimately weaken Israel's ability to maneuver diplomatically?

[Answer] It will. Israel is in a weak diplomatic position and will continue that way. This is precisely the point that the Arabs have failed to exploit. Israel cannot survive without support from the West, especially from the United States.



The Arabs can survive. The Arab strategy must be to persuade America and the West that the flow of oil is contingent upon cultivating Arab friendship, and that building such a friendship is not possible without Israeli concessions in Palestine.

[Question] Up to now, Israel has not officially admitted that it has nuclear weapons. Are there reasons for that? Do you think an announcement to that effect would confirm the existence of a military imbalance in the region?

[Answer] Possibly.

[Question] Does this have to do with the fact that the Arab countries are less likely to suffer as much in the event of an Arab-Israeli nuclear war?

[Answer] Of course. The population density in the Arab countries is much less than it is in Israel. The Arab countries have extensive territories. While entire cities such as Baghdad, Cairo, and Damascus could be wiped out in a nuclear exchange, much of the Arab population would escape unharmed. Not so in Israel. If Haifa, Tel Aviv and the population centers in its vicinity are destroyed, Israel would be finished.

I had to think of the possibility that cities like Amman and Damascus--which I have grown to love--could be destroyed in a nuclear attack. But it is possible to destroy Amman or Damascus or Beirut without posing radiation or nuclear fallout dangers to Israel. All this, of course, depends on the height from which an atomic bomb is dropped.

[Question] Let me ask about the Soviet position in this affair. The Soviets do not provide their friends with reactors that could be used for the production of weapons. They also withhold nuclear know-how. The extent of their nuclear foray in the Middle East was to provide Egypt with a limited capacity reactor, now located in Inshas. Why?

[Answer] The Soviet policy is to refrain from giving nuclear reactors to countries in the Soviet sphere of influence. The Soviets' ultimate plan is to bring the Arab countries into this sphere. For this reason, they are not willing to introduce nuclear technology into the region.

[Question] There is a rumor in the West that the Soviets have given assurances of aid to certain Arab countries in the event these are subjected to a nuclear attack. The nature of these assurances is unclear or unknown altogether. How would the Soviets react to a situation in which Israel resorts to nuclear weapons?

[Answer] I do not know precisely. All I can say is that the Soviets are motivated by one objective: to increase their power and their ability to exercise it. All their actions are directed toward this goal. I hope you are realistic enough not to be misled by those who claim that the Soviet goal is to further the peace and prosperity of the Arab world.

[Question] In the wake of the Soviet invasion of Afghanistan and the revolution in Iran, do you think the United States has developed a new Middle East strategy?

[Answer] No. I think they are studying the situation. Their biggest problem, I think, is how to enlist Arab support. It does not appear that they have succeeded.

This brings us back to where we began, i.e., Arab support for America is contingent upon what happens in Palestine. Unless the United States can pressure Israel to offer concessions acceptable to the Arabs, Arab support in the region will not be forthcoming. And without that support, American power is useless.

[Question] It is not true, then, that the United States has withdrawn some of its NATO forces to bolster its position in Southeast Asia? [The reference is more likely to Southwest Asia.]

[Answer] No. The United States has 2 divisions ready for deployment in crisis areas. These are the 825th and the 101st. Both are stationed in the United States. That is no secret. They also have 2 marine divisions. These forces, however, are not under NATO command. All the Americans did so far is to improve the readiness of these forces.

### Israel Fears Egypt's Nuclear Development

London AL-HAWADITH In Arabic 23 Aug 80 pp 20-22

[Text] Israel's Supreme Court during the first week of this month met in secret session to consider an order by the country's Military Censorship Office to forbid the publication of the book "Nobody Will Survive After Us," on the grounds that the book reveals details of Israel's nuclear weapons program as well as the atomic explosion carried out last September by Israel and South Africa. As its title suggests, the book authored by the Israeli journalists Eli Tayshir and Amy Dornan, is an epic glorifying Israel's military prowess and its ability to destroy aggressors. The book, however, includes some information on Israel's secret nuclear program, details the adventures of Mossad--Israel's foreign intelligence organization--in obtaining fuel for Israel's nuclear bombs, and makes references to the nuclear explosion conducted jointly in the Atlantic Ocean by Israel and South Africa.

In seeking to end the ban on publication, the publisher argued before the court that all information contained in the book had been published earlier and could not, therefore, be classified as military secrets. The Military Censorship Office argued not only that the ban should be upheld, but that the court proceedings be kept secret. In an effort to avoid precipitating a crisis, the court postponed decision on the case.

The details of the joint atomic explosion had earlier been made public by CBS correspondent Juan Rafin. The disclosure was made in Rome in order to escape Israeli censorship. Rafin's press credentials were later withdrawn by the Israeli Government in retaliation.

The Israeli's nuclear weapons program has 2 objectives: To keep its and enemies guessing, and to keep its continually changing nuclear strategy shrouded in secrecy. By keeping its strategy secret, Israel hopes to preserve the vital element of surprise and to maintain the initiative in the event of a nuclear war.

While, for example, both the United States and the Soviet Union can withstand and respond to an nuclear attack, Israel cannot. The country's small size makes it extremely vulnerable to nuclear attack, even by the smallest nuclear explosive. Furthermore, Israel cannot deliver a nuclear blow against its neighboring enemies

including Jordan and most of Syria [for fear of endangering its own safety]. Israel's nuclear strategy must, therefore, be very flexible, and both its capacity to develop nuclear weapons and to deliver them under all conditions must be assured.

When France and Israel signed the 1957 agreement for the purchase of Israel's first nuclear reactor--the one at Dimona, in the northern part of the Negev Desert--Israel had already prepared a list of potential targets for its soon-to-be produced atomic bombs. France, too, had a clearly established goal when it decided to help Israel with its nuclear program. The agreement took place soon after the Suez aggression [1956 war], which saw [Jamal] 'Abd al-Nasir emerge as the clear victor and sole master of the Suez Canal.

The details of the Dimona agreement remain secret. Neither France nor Israel appears ready to divulge them, and this despite repeated efforts by both the United States and the International Atomic Commission.

Two years earlier, under the Eisenhower Atom for Peace program, the United States had agreed to supply Israel with the Nahal Suriq reactor and to train 56 Israeli scientists at the Oak Ridge Center and the Argonne National Laboratory. The United States was later surprised when it discovered that the majority of these U.S. trained scientists were working at the Dimona research center rather than at the site of the American-supplied Nahal Suriq reactor. The discovery raised American suspicion about Israel's nuclear intentions. The United States on several subsequent occasions requested Aba Eban--Israel's foreign minister at the time--to provide assurances that his country was not engaged in building an atomic bomb. When those requests went unheeded, the White House asked Israel's former prime minister David Ben Gurion for assurances. Ben Gurion's celebrated response, still used by Israel today, was that "Israel would not be the first country to introduce nuclear weapons in the Middle East."

At the time Ben Gurion made that statement, he was preparing to sign the secret decision by the Israeli Government to begin work on that country's first atomic bomb. Many Israeli scientists and politicians were opposed to the decision on 2 grounds: the excessive cost of the program, which, up to then, could only be afforded by the United States, the Soviet Union, and Britain--indeed, Britain obtained most of the research results from the United States--and concern about adverse world reaction should news of the decision leak out.

Ben Gurion and the generals who supported the decision--including Shimon Peres who took charge of the military component of the program--argued that France was willing to bear the major portion of the cost in exchange for the information soon to be gained by the U.S. trained Israeli scientists.

Ben Gurion reportedly said at the time that France's then prime minister Guy Mollet had been dealt a severe lesson by Washington during the Suez invasion, and that Mollet had decided to free France from dependence on Washington and to build an independent French atomic capability.

The opportunity to cooperate with France, Ben Gurion reportedly argued, would save Israel time and money. In response to objections that the program, if discovered, could generate adverse world opinion, Ben Gurion reportedly said that he had told the Americans that Israel was constructing a large textile mill at Dimona, and that they, the Americans, were satisfied with that explanation.



Known only to France, Israel began work on its atomic bomb in 1958. By the early 60s, it had 8-10 plutonium bombs in the 20-25 kilo-ton range. It also became a producer of heavy water, a principal ingredient of the atomic weapons technology. Uranium for the Israeli program was extracted from the phosphate mines in the Negev Desert. Between 30 and 35 tons were mined annually. Israel's uranium deposits are estimated at 40,000 tons.

While work on the bomb proceeded, Israel began to look for a delivery system. At the time, it had only airplanes. Aware that airplanes could be stopped before reaching their targets, it decided to develop a missile-based delivery system. It was at this point that the Israeli game was discovered. American intelligence quickly learned that a number of the missiles supplied to the Israeli Army by the United States were being modified at Israeli armament factories to carry atomic warheads. Washington became convinced that Israel had joined the atomic club, and that it had the capability to deliver an atomic blow against its enemies.

Up to this point, none of the Arab countries, except Egypt, had considered the possibility of developing a nuclear program. The Egyptian program, located at Anshas, was based on a 3-megawatt Soviet reactor adequate for research purposes only. President Jamal 'Abd al-Nasir's efforts to enlist outside cooperation for Egypt's atomic program were fruitless. One advantage of the Anshas center, however, is that it opened the way for training a generation of Egyptian nuclear scientists. Other Egyptians were trained in the United States, the Soviet Union, and Britain. According to a report issued last year by the International Atomic Commission, Egypt now has the largest number of nuclear scientists in the Third World.

Egyptian scientists were among those present in 1974 when India carried out its first atomic explosion, some of them actually taking part in the experiment. To date, however, Egypt has not been able to initiate an advanced nuclear program of its own.

Soon after the Indian experiment, a secret American intelligence report on Israel's nuclear activity was made public by error. Some believe the error was deliberate.

The 5-page report, crammed with evidence, accused Israel of obtaining uranium illegally. Israel's intelligence organization, Mossad, was accused of stealing uranium shipments destined for Europe. The report listed several items as giving strong evidence that Israel was engaged in the development of nuclear weapons:

- Israeli procurement of large amounts of enriched uranium, which is used exclusively for weapons manufacture.

- Israel's unusually large budget for missile development, indicating that the missiles were being modified to carry nuclear warheads.

- Increasing the capacity of the American-supplied Nahal Suriq reactor from 1 to 10 megawatts, and the Dimona reactor from 26 to 70 megawatts. (The new capacity of the Dimona reactor enables it to produce enough fuel for 8 bombs annually.)

- Increasing the range of some of the already modified missiles to 1,000 kilometers.

Until 1973, Israel's nuclear strategy was based on delivering an atomic blow against Egypt's High Dam. Israeli warplanes using Sinai Desert bases were capable of reaching

the dam. The Egyptians were confident they could stop these planes with their Sam-6 missiles. The Egyptians, however, had no hard information on the range of Israel's ground-to-ground missiles, the only delivery vehicles the Egyptian air defense could not stop. In the 1973 war, Egypt deliberately fired a few intermediate-range Skud missiles against Israel in a vain effort to draw the Israelis to respond. The Israelis ignored the bait and the range of their missiles remained a secret.

The Israeli strategy changed after 1973. The High Dam was no longer a first priority target, except in the event of another total war with Egypt. The Israeli withdrawal from two-thirds of Sinai renders a strike against the dam even more difficult. Many strategists ascribe Israel's hesitance to withdraw from Sharm al-Shaykh as evidence of its unwillingness to abandon the only Israeli base from which the High Dam can be reached with long-range missiles. Western military experts believe Israel will not withdraw from the remainder of the Sinai Desert until it is certain that Egypt will not go to war with it again.

It is important to note here that the attention of Israel's nuclear strategists has shifted away from Egypt. It is now directed eastward and northward, primarily to Syria and Iraq. Striking against Iraq is now possible with the aid of long-range missiles equipped with nuclear warheads. Such a strike, furthermore, poses no fall-out danger to Israel itself. Iraqi targets are sufficiently removed from Israel's borders. The situation in Syria is different, however. Israel cannot launch a nuclear strike against Damascus, for example, without endangering its own safety. It can, however, strike against Latakia or Aleppo, but the proximity of these cities to the Turkish border could expose Turkey to immediate danger. The proximity of Jordan to Israel makes a strike against Jordan out of the question.

Aware of these ramifications, Israel has begun to develop a so-called "clean" or "tactical bomb," one of limited power. To test its new weapon--conventional bombs do not require testing--Israel sought the aid of its strongest ally in the world today, the racist government of South Africa.

Early in 1975, the two countries embarked on a joint program for the production of clean and limited-power warheads. A team of Israeli nuclear scientists arrived at the nuclear research center of Wetwatersand University in Johannesburg under the pretext of an academic exchange program to begin secret preparations for the joint nuclear effort. Discovering that the nuclear reactor in Bilandaba near the capital city of Pretoria was inadequate for their purposes, the Israeli scientists built a new one in Valindaba. Construction of the reactor was completed in 1975, and work on the clean warhead commenced.

Based on data gathered by its spy satellites, the Soviet Union in 1977 accused South Africa of making preparations to detonate an atomic bomb in the central part of the Calahari Desert. While denying the charge, South Africa refused to permit an inspection by the International Atomic Commission. Its excuse: the inspection would jeopardize the area's military security. The Government of South Africa, following the example of Israel, also refused to sign the nuclear non-proliferation treaty sponsored jointly by the United States and the Soviet Union.

In September, 1976, the Israelis and their South African colleagues succeeded in exploding a clean bomb in the ocean south of Capetown. The explosion was detected by an American satellite, and the story was revealed.

The proximity of the site of detonation to the African coast and the small size of the radioactive cloud convinced scientists that the experiment involved a clean bomb. According to the best available estimates, Israel and South Africa can go into full military production by 1984.

South Africa is quite satisfied with its present nuclear strategy. It now has an effective deterrent, which, in an emergency, could be used to halt the advance of the black onslaught from the north. The emergence of an independent Zimbabwe makes this danger all too real.

The situation is quite different in Israel. Its acquisition of a clean bomb that could be safely used against its immediate neighbors coincided with the furor over the Pakistani--the Islamic--bomb. This was followed immediately by news of the French-Iraqi nuclear deal. It is now certain that Pakistan has a sufficient supply of enriched uranium for a trial bomb before the end of this year. Should the experiment succeed, Pakistan, in three years, will be able to make enough nuclear weapons to put it in the same rank as France or, possibly, Britain.

While the Pakistani bomb does not worry Israel, the Libyan connection to the Pakistani effort does. It is common knowledge that Libya has financed the lion's share of the Pakistani venture. It is also known that Col Mu'amar Qadhafi of Libya has signed an agreement with Pakistan's former president Ali Bhutto. That agreement is still in effect.

In addition to the Libyan-Pakistani agreement, the Soviet Union is now building a nuclear research center at Sirte on the Mediterranean coast. This center is capable of housing 2 reactors. A second center is being constructed at Taghrifat. When the two centers are completed, Colonel Qadhafi is expected to request General Zia-ul-Haq of Pakistan to deliver on the agreement, thus giving Libya a nuclear capability before the end of the 80s.

These developments were followed by the disclosure that France was building an Osiris-type reactor in Iraq under the trade name of Ozirak. The 70-megawatt reactor is capable of being used for weapons production, provided a sufficient supply of enriched uranium is available.

The consensus now is that the Iraqi reactor has or will change the nuclear equation in the Middle East. While, by Israeli estimates, Israel will be able to deliver a limited nuclear strike against the Arab world by 1984, and thus put that world at its mercy for that duration, Iraq and Libya, in less than 3 years, will be able to neutralize the Israeli nuclear threat.

Of greater concern to Israel, however, are reports that Egypt may re-enter the nuclear game. Egypt and Zaire early this year reportedly signed an agreement whereby the two countries will undertake the exploitation and further development of uranium mines in Zaire. Indeed, an Egyptian-Zairean company, with financial backing from West Germany, has reportedly been created for that purpose. Egypt last year also asked Washington to deliver on a long-standing agreement whereby the United States is committed to supply Egypt with 2 nuclear reactors. The agreement was contained in a promise originally made by former President Nixon, and later confirmed by President Ford.

The agreement was made following the conclusion of the temporary disengagement treaty between Egypt and Israel. The terms of the agreement, which was accepted unconditionally by Egypt, give the United States the right to maintain complete supervision of the reactors. A similar provision was adamantly rejected by Israel. The deal fell through, however, because the United States had reportedly promised Israel in secret not to deliver on the Egyptian deal unless Israel received the reactors promised to it under the same agreement. The fact of the matter is that Israel never really wanted the American reactors all along; its sole reason for rejecting the terms of the agreement was to deprive Egypt from obtaining its share of the deal.

Washington is yet to respond to the Egyptian request, and it is unlikely that it will before the end of the American elections next November. In the meantime, President al-Sadat has not been idle. According to reports in the French press, Egypt and France have been negotiating a nuclear cooperation treaty for the past 6 months.

Stability in the region appears to hang in the balance. Failure to come up with a comprehensive political solution to the Middle East problem will in a few years increase the likelihood of a nuclear one. According to these estimates, a workable solution must be found before 1984.

Observers, however, do not rule out the possibility of a pre-emptive strike by Israel--in its traditional fashion--if an occasion presents itself. When its arsenal of clean and limited-power bombs is complete 4 years from now, and before the Arabs manage to match that arsenal, Israel may just launch another so-called "preventive" war. In the words of one French military commentator such a strike would be a "true nuclear equalizer or mark the instant of certain nuclear suicide."

#### Strategic Studies Institute Interviewed

London AL-HAWADITH in Arabic 23 Aug 80 pp 22,23

[Text] Whenever strategic experts of the world's think tanks discuss the Arabs' potential for developing a nuclear capability, they usually refer to the writings of (Egypt's) Muhammad Hasanayn Haikal. This was the case, for example, when it was rumored that Libya's president was trying to buy an atomic bomb from China for use against Israel. The truth of the matter is that Haikal, as usual, was simply trying to arouse anxiety in the West. A second characteristic of Mr Haikal's writings is his attempt to portray Egypt as the undisputed leader of the Arab world, the country that holds the key to peace or war in the Middle East, as well as the one that could deter Arab leaders from undertaking actions that the Western world considers rash and destabilizing. A case in point, directly related to Mr Haikal's writings, is the current furor in the Western media against Iraq's attempt to acquire a nuclear capability, and the subsequent [but unfounded] charge that the Iraqi effort is tied to Pakistan's nuclear program. The fact is that no such linkage exists. As evidence for this assertion, we quote here a statement on the matter by one of the analysts of the London-based Strategic Studies Institute.

Pakistan has possessed a nuclear reactor for a long time. The primary opposition to the Pakistani nuclear program comes from India, and is based on that country's fear that Pakistan would channel its nuclear effort to produce atomic bombs. But India's fear is not the reason why the United States Senate took a dim view of Pakistan's insistence on developing its nuclear program to the point where it can produce atomic bombs.



AL-HAWADITH inquired further of the expert.

[Question] But the United States did cut off all aid to Pakistan even before the Afghanistan crisis. Why then does it not stop aid to Israel despite the numerous official reports that Israel is producing atomic bombs?

[Answer] The United States' primary objective is to get Pakistan to adhere to the terms of the nuclear non-proliferation agreement. Israel is not a signatory to that agreement.

[Question] But, even so, the United States, to preserve the spirit of that agreement, should discontinue aid to Israel. Why does it not treat Israel and Pakistan equally?

[Answer] That is a good question, but I cannot answer it. My feeling is that the Middle East should remain free of atomic weapons. But the fact is that there are such weapons in the area, and the question now is how the United States can exert pressure to deter Israel. Let us take India as an example. When India detonated its first atomic bomb in 1974, there were angry reactions from the United States and [Pakistan's former president] 'Ali Bhutto. The Canadians, who had supplied India with its nuclear reactor, also were angered. India, indeed, had promised Canada not to use the reactor for making bombs. International agreements are not opposed to the spread and use of nuclear reactors for peaceful purposes. The problem came about when India made an atomic bomb. Now Pakistan wants to do the same and the race is on. Both countries are intent on developing their atomic weapons to the point where the peace of the region and the world might become threatened.

[Question] The prevailing moderate view is that Pakistan wants the bomb for self defense. Why can't this argument be applied to Iraq?

[Answer] The Israelis and the Indians claim that they would not use their atomic weapons, or that they will use them for digging canals and other such purposes as the Soviets do. But I have a dimmer view of how these weapons might be used.

[Question] Yitzhak Rabin, when he was in office, reportedly once threatened to use atomic weapons. "There is no need to explain what we might do should we decide to strike Arab cities," he said on one occasion. In response to that remark, then Senator Fullbright and political commentator Joseph Alop both intoned that Israel was threatening to use atomic weapons.

[Answer] I believe that Mr Rabin made the remark in response to reports that Syria had acquired Scud missiles, which not only have a devastating explosive power, but are capable of carrying nuclear warheads. In reality, a country with nuclear weapons would normally use these weapons as a deterrent. But if Israel decides to strike Cairo, it will only succeed in arousing even greater anger. This point needs further clarification. The Americans and Soviets have advanced delivery systems. This is not the case with the Pakistan, India, the Arabs, and Israel. The only means available to the latter is airplanes. Based on this, airports would become priority targets. The only way to prevent an adversary from launching an atomic strike would be to destroy all its airports. Israel, however, has the Jericho missile, which is a mobile delivery system. This system, nevertheless, is classified technically as an air delivery system. By contrast, the Americans and Soviets house their rockets in underground silos. The silos are fixed targets. Hitting such a target requires

extremely accurate aiming ability. Atomic bombs delivered from the air cannot be aimed with this kind of accuracy. They could fall any place. In the absence of guidance systems, atomic bombs pose a danger that cannot be avoided.

[Question] You mentioned in a previous publication--last April--that Israel might use atomic weapons in a future war with the Arabs.

[Answer] Observers have always tended to believe that Israel, in an extreme emergency, if its survival is threatened, for example, might resort to atomic weapons. This belief is in part inspired by the biblical Samson legend: "Me and my enemies." Jewish propaganda tends to foster this spirit in the Israeli armed forces. There was much talk about the possibility of Israel using atomic weapons against Arab cities during the Ramadan war, when Israel was temporarily faced with possibility of losing that war.

[Question] Why, then, is the West in such an uproar over the prospect that Iraq might develop an atomic bomb, especially since such a development poses no threat to the West?

[Answer] The general feeling among those who already possess nuclear weapons is that countries that come to possess atomic devices might someday use them. In my opinion, there is in the West a little sense of being "holier than thou." After all, the West supplies the rest of the world with reactors, delivery systems, and nuclear knowledge and technology. Another theory, perhaps explaining Western anxiety, is that America and the West are supportive of Israel, while the Soviet Union is aligned with the Arabs. Any development that threatens to make an Arab-Israeli war more likely, according to this theory, evokes fear of a nuclear confrontation between the two superpowers.

[Question] Why do the Soviets refrain from selling weapons grade reactors to Third World nations? The Soviets' only contribution to date was to give Egypt its Anshas reactor, one that, by Western estimates, is incapable of use for bomb production.

[Answer] I believe that the Soviet Union does not produce reasonably small reactors. Furthermore, the Soviets need all the reactors they could produce to take care of their own energy needs. They are looking ahead to the days when their oil resources would dry up, sometime in the 80s according to current estimates. But I have no idea why they do not supply the Third World with nuclear know-how.

#### French-Iraqi Nuclear Agreement

London AL-HAWADITH in Arabic 23 Aug 80 p 24

[Text] The French are the ones who have supplied Iraq with nuclear reactors and fuel. That action was based on a political decision by the French Government. Some French scientists, however, have reservations about that decision, and their reservations are also politically motivated. Francis Perin, a member of the French Atomic Energy Commission since 1946, and executive chairman of that commission since 1951--He was confirmed in that position by General De Gaulle in 1960 to oversee France's nuclear program--is the most prominent dissenter to the French-Iraqi deal. Perin denies that there is a distinction between useful and military applications of nuclear energy. He is of the view that any development in the field of nuclear technology is likely to set the stage for the production of nuclear weapons. He rejects the

notion that Iraq needs nuclear energy on the grounds that Iraq is rich in oil resources, and claims that a less developed country such as Iraq must concentrate on other, more essential needs.

France's legal cover, of course, is that Iraq has signed the nuclear non-proliferation treaty in 1969, and has thus accepted the principle of putting its reactors under the supervision of the Vienna-based International Atomic Energy Commission. While Perin neither denies the important role played by this agency--indeed, he claims that it is doing an effective job--nor claims that Iraq will fail to live up to its international obligations, he cannot be sure, he says, that Iraq will not produce nuclear weapons." While we cannot accuse Iraq of planning to disavow its international obligations," he says, "it is possible that future circumstances will, as happened in India, lead Iraq to the production of weapons."

Perin believes that the likelihood of failing to honor the provisions of the nuclear non-proliferation treaty is not limited to Iraq. It is conceivable, he thinks, that any signatory to the treaty could at some point decide to repudiate its obligations on the grounds that the countries which originate the treaty are themselves failing to adhere to it. In support of his thesis, Perin cites the continuing nuclear race between the United States and the Soviet Union. He maintains that countries with small nuclear capabilities and those, like Iraq, which are just entering the nuclear field, could always argue that the major powers are themselves not living up to their obligations under the treaty.

Perin goes on to claim that France, by providing training to Iraqi engineers and physicists, in addition to reactors and uranium, is making it easy for Iraq to acquire nuclear weapons in a few years. His opposition to the Iraqi deal, according to him, is based on the assumption that it will not be easy to dissuade Iraq from moving in the direction of weapons production despite French Government assurances to the contrary. "We must discourage the production of more nuclear," he says, "even though we may not succeed completely, especially in the case of the richer nations."

While Perin is not fully aware of the details of the French-Iraqi deal--the agreement was signed after he left his position on the French Atomic Energy Commission--he feels that France can control the situation, particularly since Iraq will be dependent on France for its nuclear fuel needs.

The French Government, on the other hand, denies officially that its agreement with Iraq contains any special provisions not included in similar international agreements. Nevertheless, it insists on keeping the terms of the agreement secret, and this is precisely the point that Israel and the Zionist media are exploiting to cast suspicion on the French-Iraqi deal.

In an interview with FRANCE SOIR, Mr Perin indicated that Israel is concerned that the French-Iraqi deal might contain a secret provision that could threaten Israel's security. Adding to this fear is the knowledge that Iraq, not satisfied with the French deal, has made other agreements with Italy and Brazil. While Brazil can supply Iraq with sizable amounts of uranium, Italy can provide additional reactors, as well as aid in the construction of a recycling facility, one that could be used for extracting plutonium from spent uranium, in sufficient quantities to produce several nuclear bombs.



Commenting on this point, Perin says: "I am against secret nuclear aid agreements. It is not logical to insist on secrecy in the French-Iraqi arrangement. This insistence is bound to create international suspicions harmful to France's interests."

Perin ridicules the idea, most often perpetrated by cheap novels, that terrorist groups that somehow manage to acquire an atomic bomb could hold the world hostage by threatening to use the weapon. He points out that the acquisition and use of an atomic device require a greater deal of planning and technical skill, and that such a feat is possible only in the industrialized world. Nonetheless, Perin acknowledges that he is concerned about the possibility of nuclear blackmail by the more powerful nations. It is not inconceivable, according to him, that a nuclear power could use the threat of its nuclear weapons to compel compliance to its demands by other nations. The Middle East, Perin maintains, the theater of the Arab-Israeli conflict, is, by virtue of its turbulence and closeness to war, is the most likely target for this type of nuclear blackmail. Because the Israelis probably possess atomic devices, Perin continues, they are less likely to give in to this type of threat from their neighbors, and thus increasing the danger of an atomic conflagration.

A high ranking Israeli military intelligence officer told the Knesset's Foreign Relations Committee that he believed Iraq was laying the groundwork for an atomic strike capability, and that it has moved some distance in that direction with the help of its nuclear agreement with France. What remained, the officer reportedly said, was the political decision to go ahead. The officer reportedly told the committee that the Arab-Israeli conflict was among the factors that led Iraq to opt for nuclear weapons, other factors being Iraq's position in the Gulf area and its radical political philosophy.

It is noteworthy that Israel's scientific community takes a more extreme position on the Iraqi development than that country's intelligence apparatus. The Israeli physicist Yuval Niman claims that Iraq did not import the nuclear technology for research purposes, and that Iraq's only research physicist is in jail. Niman further claims that the international scientific community had asked him to appeal for the release of the imprisoned Iraqi scientist, but that he [Niman] was helpless in the matter.

Mr Niman--who also heads the extremist Tahya Party--maintains the French reactor is too small for use as a source of energy, and that the only possible use for it is in bomb making. Niman told the JERUSALEM POST, and we quote him verbatim: "The only thing left for the Iraqis to do is select the kind of bomb they want. They can put a quick bomb together using enriched uranium, but plutonium can give them a larger number of bombs. The French reactor can produce 3 or 4 plutonium bombs per year, but with the aid of foreign scientists Iraq can make its first bomb in a year, or even in 6 months."

What prompted Israel's political circles to take Niman's remarks seriously is that they came on the heels of a visit to the scientists' Tel Aviv University office by France's scientific attache, Dr Jacques Simon. The visit was ordered by France's ambassador to Israel, and was aimed at exploring the reasons for the concern expressed by Israel's scientific community over the French-Iraqi deal, as well as to explain the position of the French Government on the issue.

9063

CSO: 4802

## DECISION ON NUCLEAR POWER EXPECTED IN APRIL

Jerusalem THE JERUSALEM POST in English 5 Dec 80 p 2

[Text]

BEERSHEBA. — The government will make a final decision on whether to build nuclear power stations as soon as the Horev Commission produces its first report on the subject in four months, Energy Minister Yitzhak Moda'i said here last night.

It would then be possible to construct a nuclear plant in 5 1/2 years, Moda'i told the annual conference of Israeli nuclear societies at Ben-Gurion University.

The commission of government officials, academics and industrialists headed by Technion president Amos Horev, which was formed in October, is investigating two issues, Moda'i said: the vulnerability of nuclear power stations in wartime, and suitable sites.

Moda'i came under heavy criticism from scientists at the meeting, who said he should have set up the commission three years ago. The previous government had already given the go-ahead for a nuclear plant in 1975, speakers pointed out.

Uzi Eilam, director-general of the Israel Atomic Energy Commission, said that it then proved impossible to build a new plant because the U.S. administration refused to authorize U.S. companies to supply Israel with a nuclear reactor. The proposed Nitzanim site in the Negev also proved to be seismically unstable.

Prof. Shimon Yiftah, president of the Israel Nuclear Society, just returned from a conference of nuclear scientists in the U.S., said the atmosphere there was "euphoric" because of the election defeat of President Jimmy Carter, whose administration had meant "four lean years" for U.S. nuclear energy.

Prof. Chauncey Star, vice-chairman of the Electric Power Research Institute in California, predicted that the attitudes of Reagan's advisers and of new congressional energy committees mean that the U.S. is likely to adopt a more liberal policy towards export of its nuclear technology.

SYRIA SAID TO OBTAIN NUCLEAR WEAPONS UNDER SOVIET FRIENDSHIP TREATY

Paris AL-MUSTAQBAL in Arabic 27 Dec 80 p 14

[Text] Official Syrian sources emphasize that Syria has now become stronger than ever before, both internally and militarily, and that the Syrian army is now equipped with the most modern Soviet weapons which are capable of repelling any Israeli [act of] aggression, be it carried out with traditional or advanced weapons, or even with nuclear weapons.

Western circles comment that this Syrian claim is real, and that one of the provisions of the treaty of friendship signed with the Soviet Union provides for Syria to obtain Soviet nuclear weapons which Syria would use in the event of an Israeli nuclear attack.

These Western sources add: "The Arab states are certain that Israel possesses nuclear weapons, and that Syria, which is opposed to the peace talks, was in need of overcoming the nuclear gap in its defenses. This was the reason for the nuclear provision in the treaty." These sources add: "The Soviet Union has nearly doubled the number of its military advisers in Syria, and Soviet weapons have poured in large quantities into Syria during the past two months."

The number of Soviet military experts, airmen and technicians in Syria has increased to about 8,000 persons. Recent Soviet shipments to Syria included a Mig-27 air squadron (12 planes), and a number of T-72 tanks and SAM missiles which arrived by sea. These Western sources are of the opinion that Syria has so far received 3,000 Soviet tanks and 400 Soviet warplanes.

CSO: 4802

NATION'S ENERGY OPTIONS DISCUSSED

Pro, Anti Nuclear Energy

Port Louis LE MAURICIEN in French 13 Oct 80 p 5

[Interview with Germain Commarmond, nuclear engineer, and Dr Swaley Kasenally, pro-vice chancellor of Mauritius University, with Pierre Benoit; date and place not given]

[Text] Oil or ethanol? The question was asked during the energy seminar at Mauritius University which had assembled eminent Mauritian scientists for a debate on prospects for the exploitation of domestic energy sources.

During this seminar, Dr Swaley Kasenally, pro-vice chancellor of the university, did not hesitate to take a position against the plan to install a refinery on Mauritius and listed the reasons which motivated this choice, while in a related vein he stressed the advantage of having one or more distilleries for the manufacture of ethanol, a product which, like gasoline, is being used increasingly in the world as an economical automobile fuel.

However, Dr Kasenally went beyond that and stated it was necessary to examine the Mauritian energy problem from the standpoint of the future. Then he posed an idea-question which had the effect of a bomb, without playing on words: should not Mauritius envisage the nuclear alternative around the year 2000?

After that, even though Dr Kasenally, a well-known scientist, had not tried to create a sensation, he was to be unable to stop the locomotive which he had set in motion.

The following Sunday, a young engineer-chemist, Germain Commarmond, made his contribution to the debate in the 28 September issue of WEEK-END: the refinery and ethanol distillery plans are both viable and complementary. Then he set forth his thesis.

The following day, Dr Swaley Kasenally telephoned LE MAURICIEN. He wanted to reply.

Was this the beginning of a polemic which, because of its technical nature, was going to go way over the heads of us laymen?

Was not a face-to-face meeting indicated instead? There was no prior problem: the two scientists are friends. Contacted by us, they both agreed at once.

Thus, at the initiative of Pierre Benoit, this fascinating exchange of views took place which, as the reader will see, provides worthwhile clarification of Mauritius' quest for an immediate definition of an energy policy suited to its needs and the aspirations of its people.

"Nuclear energy" was discussed first. Germain Commarmond is opposed and he said why. Next the question of oil versus ethanol was taken up. In this sector, Dr Kasenally, who does not fall back from bold ideas (which for all that are not to be taken lightly) brought an unexpected thought to the debate by mentioning the possibility of Mauritius' manufacturing 100 percent alcohol in 10 to 15 years to reduce our imports of fuel as much as possible, with 100 percent alcohol being called upon to replace the gasoline used for our automobiles, as is the case in the countries he cited.

Dr Swaley Kasenally, to support his arguments, had documentation which summarized the results of the latest research conducted in the seething energy sector, and more precisely the use of agricultural alcohol.

Germain Commarmond had also spread out voluminous documentation to defend his thesis of the complementariness of gasoline-alcohol...and displayed profound knowledge of the methods available today for the economical extraction of alcohol from molasses, thanks to research. However, the manufacture of 100 percent alcohol per se runs into several objections one of which is calorific in nature. But read and reread what came out during this debate. The journalist who conducted it attempted to make it understandable to the greatest number of readers possible. A few calories fell by the wayside, but after all what was involved was the recovery of energy.

At a time when there is active preparation for a national conference on energy, which will be held in mid December at Mauritius University, LE MAURICIEN is happy to present to its readers the interesting arguments developed during the debate by Dr Swaley Kasenally and Germain Commarmond on a question which is as crucial as the definition of Mauritius' energy policy for the future.

LE MAURICIEN: Germain Commarmond, in the recent seminar which was held at Mauritius University, Dr Swaley Kasenally said this in substance: Should Mauritius turn to nuclear energy in 25 years? How do you, who have training in nuclear engineering and who have engaged in research for 3 years at the National Institute of Nuclear Science and Technology in Saclay, react to this statement?

Germain Commarmond: As far as nuclear energy is concerned, I have nothing but objections. In the first place, at the technological level, the fabric of Mauritian industry, the technical capability of our large plants in Mauritius is such that we still are unable to integrate a nuclear power plant. For example, to weld pressurized tanks we must often call upon foreign welders.

There is not one "coded welder" [quote in English] in Mauritius. That is the situation for relatively simple work. It should also be realized that the standards for a nuclear power plant as regards gates, piping, nuts and bolts and flanges are very strict standards. Metallurgy is a key factor in the nuclear power plant sector.

Of course, this nuclear power plant will be constructed under license. There will be foreign manpower which will do the construction work at the beginning; however, it will have to be maintained over the long term. I fear it is in this area that we



have not yet attained the technological level required to do so. So much for the metallurgical aspect. There is also the prestressed concrete aspect. The concrete enclosures of the nuclear power plant are very sophisticated and there, too, perhaps we still do not have the technology. That, then, is my objection concerning Mauritian industrial capability.

Next, my second objection has to do with fuel supplies. It will be difficult for us to obtain fuel. You have only to consider the recent case of India: the American House of Representatives opposed the supplying of uranium to India, and it was only the Senate by a vote of 48 to 46 which permitted India to have its uranium. Europe, which clearly foresaw that there was going to be a shortage of fuel, established the big consortium which is called EURODIF [European Distribution Agency] to enrich uranium, to be autonomous.

Third objection: fuel reprocessing. Once the fuel is taken out of the core of the reactor in steel tubes, it must be reprocessed. There will be problems of transportation and maintenance, given the fact that we are quite far from the big centers. The fuel will have to be sent to factories for reprocessing.

Fourth objection: radioactive waste. What are we going to do with it? How will we containerize it? Where are we going to throw it: into the sea, perhaps? There is the choice of location. Mauritius is a small territory; there are no large rivers, and the power plant will not be in the interior of our land.

It will of necessity be on the seacoast. Therefore, on which coast should it be installed? What impact will it have on tourism? And are we able to predict the effect of cyclones and tidal waves? Mauritius' case is extremely specific. And then when we say nuclear power plant, given the fact that radiation is odorless, invisible, intangible, we will be unable to prevent a psychosis from being created, even if there is no radiation in the air, and to make people believe that no radiation is issuing from the plant's enclosure.

Finally, there is a problem of society. When there is a nuclear power plant, of necessity we have a police state. Security and control are pushed to the extreme. What is the threat to freedoms: the same debate is shaking European societies. Finally, ecology: the power plant has to be cooled. In Europe where there were trout in the rivers, the temperature rose 4°. Marine fauna will be affected in the area surrounding this power plant. Finally, the per kilowatt-hour investment. Are power plants sufficiently miniaturized to meet Mauritius' demand in the year 2000? According to available information, the smallest power plant is in excess of our needs. What are we going to do with the other electricity-producing facilities? Are we going to let them be shelved on behalf of the nuclear power plant? And, finally, as regards power plants which should be miniaturized, this cannot be done without a certain amount of sophistication. What is the relationship between initial investment and kilowatt-hour?

Swaley Karsenally: As I said the other day at the university, in the year 2000 or later we may find ourselves in a situation in which, having exploited all our natural resources in the production of energy and in spite of the energy economies that we will have imposed upon ourselves; e.g., "daylight saving time" [quote in English] and the elimination of losses in transmission lines, we will then perhaps have a

choice to make: either go to nuclear energy or accept a decrease in our "GNP growth" [quote in English]. Because there is a historical connection between the GNP and energy consumption, the development of economic activities depend upon energy supplies.

We would then be in a critical situation: go to nuclear energy or allow our standard of living to drop considerably. Therefore, it is such a situation with which we may see ourselves confronted in the year 2010 or in 2020. At that point in time, what will be our choice? Germain's arguments have merit. These are arguments which were advanced in all countries where there was a debate on nuclear energy as we know it. There are two schools of thought: those pro and con nuclear power. As for myself, I find myself in neither of the two camps. On this question, I remain open to all ideas, to all suggestions; and that is why, moreover, I initiated the debate to determine what should be done now, this very day, so that we will not find ourselves faced with the difficult choice of which I spoke earlier; i.e., to have recourse to nuclear energy or accept a drop in our standard of living.

Germain Commarmond's arguments are quite valid; however, we must ask ourselves many other questions. But before talking about nuclear energy policy, I think it important for us to summarize our future sources of energy. Our energy policy is not going to depend so much upon scientific technology as upon the model of society which we wish to create. And it is important that the choice, as regards energy production on Mauritius, be made by the people themselves, since this policy in large measure will affect social structures or even the Mauritian lifestyle.

Will people be more interested in pushing a button to have electric current rather than going into the woods in search of wood? They will have to be asked that question. That said, let us return to our debate on the nuclear problem. The manifest hostility vis-a-vis nuclear reactors is probably due to fear of possible accidents. However, the problem is not so much the risk of accidents but of how to dispose of radioactive waste. That is really the biggest problem. Apart from the accident at Three Mile Island in Pennsylvania, U.S., nuclear reactors have had a "remarkable record of security." [quote in English] Opposition to the nuclear energy policy is based essentially more on anticipation, the fear of an accident than upon an accident itself. Accidents in coal mines are more numerous and more deadly. We should perhaps compare the statistics. How many victims have there been from radioactive effects and how many victims have there been from illnesses from which the miners of the world are suffering. And also how many victims have there been of conventional methods of producing energy: the burning of coal, the exploiting of fossil fuels which pollute the atmosphere and which kill slowly but surely. Every kind of energy has its disadvantages and risks, and no energy exploitation policy is 100 percent "safe" [term in English]. It is possible that in 10 or 20 years we will have to weigh one kind of risk against another kind of risk. For now, it is clear that the fear of accidents which have occurred in the nuclear sector has made it seem that the nuclear energy policy has more risks than the conventional energy policy.

The second aspect which should be considered is the cost of the electricity produced by nuclear energy. As a source of energy in the form of electricity, nuclear energy has undeniable advantages. The cost of the installation of a nuclear power plant is perhaps four or five times higher than that of a conventional thermal power plant; however, we must take into consideration the additional investments required for the thermal power plant for the [one word incomplete; word or words missing] is extremely specific. And then when we talk about a nuclear power plant, [we have] "waste



storage," "fuel processing" [quotes in English], security measures, etc. The advantage of nuclear energy is that it is not sensitive to changes in the price of oil and other conventional fuels. The amount of uranium required for the generation of electricity is quite minimal.

What is more, the cost of uranium as such is a very small fraction of the total "generating cost" [quote in English] and this at a time when we see the high cost of oil and its immediate effects on the cost of producing electricity, while even if the price of uranium rises, its effects will be quite minimal: "We can say that nuclear power now usually provides electricity at a much cheaper rate than coal or oil" [quote in English]. We can also anticipate that the "capital cost" [quote in English] will be amortized in the coming years. I agree with Germain on the question of training personnel to operate a nuclear power plant. That is why I said it was necessary to start the debate because we will need at least 20 years to train a team of nuclear technicians, nuclear engineers; in short, a category of completely different cadres.

Let us now take a look at the nuclear energy situation in the world. In all countries where there was a delay in the nuclear program, it was because the public became involved in the situation: in Germany, Sweden, Austria and Great Britain, public hostility vis-a-vis the nuclear program delayed the development of the nuclear industry. And in Austria, for example, they completely blocked their nuclear program. In France, they are going ahead, since the French government realized that energy imports totaled about 75 percent of its needs.

The French government had no other choice than to go to nuclear energy. The United States, which imports only 20 to 25 percent of its energy needs, is still hesitating, particularly after the Three Mile Island incident.

Let us now speak about uranium reserves. Uranium consumption is about 25,000 tons per year in the world, not including the [?communist] countries...

Germain Commarmond: We will be forced to obtain our technical equipment from those who can produce enriched uranium. The Europeans, Americans and South Africans, who are using a centrifuge process of enrichment...

Swaley Kasenally: At a figure of \$39 per kilogram we can supply ourselves for 200 years. All of that is somewhat "questionable" [quote in English]. But we have there an order of magnitude. While with oil, we can only supply ourselves for an additional 30, 40 or 50 years. We have to undertake a "benefit analysis" [quote in English].

To conclude, I will say that I am entirely in agreement with Germain that the world must find methods that are much more "safe" [quote in English] to dispose of radioactive waste. I continue to be very concerned about this problem. It is very good that debate on this subject be started at once. We have always avoided debates as important as that, particularly when it was a question of our economic activities for the coming decades. That is a debate which, I hope, will take place in the public forum. I know, for example, that the definition of the energy policy of the Swedish government had its basis in a debate on the nuclear problem, then the discussion went completely beyond the nuclear sector and became a debate on energy policy at the national level. I hope this will be the case with Mauritius.

## Plate Island Nuclear Power Plant

Port Louis LE MAURICIEN in French 25 Nov 80 pp 1, 4

[Text] A project for a nuclear power plant on Plate Island, 10 miles from the northern coast of Mauritius, will be presented by Roland Desmarais, former director general of the Central Electricity Board, during a national energy seminar from 15 to 19 December at Mauritius University.

"This is a project which has been close to my heart for a long time," Desmarais told Sydney Selvon, of LE MAURICIEN, this morning. "It is entirely feasible. The power plant will be totally run by remote radio control. This means that even in the event of an accident there would be no deaths."

This will be a 225 MWe power plant consisting of three groups of 75 MWe each. The plant would be operational in 1995 and would produce 1.8 million kilowatt/hours per year.

The electrical energy produced by the power plant will be transmitted to Mauritius via a 100 KV submarine cable. The distance to be covered to link the power plant with the Mauritian coasts is 10 miles.

Desmarais said that, in this eventuality, there would be no one on Plate Island. "Even the lighthouse keeper will have to be relocated." That means, based on his calculations, there would be no deaths if an accident were to take place at the power plant. The energy from the plant will be relayed directly to the national electricity network.

"My project will be a contribution to the national energy seminar with a view to technical discussion," Desmarais said. "According to my calculations, it is technically and financially feasible. The estimated cost for 1995 will be 15,000 rupees per installed kilowatt, which is not exorbitant. The production cost per kilowatt/hour in 1995 will still be 40 cents [sous]. The power plant will use Uranium-238 enriched by 3 percent, which we will have to import."

According to Desmarais' calculations, the production of this power plant will meet the energy needs of Mauritius in 1995. Mauritius' electrical energy demand for 1995 is estimated at 200 million kilowatt/hours.

Desmarais proposes that surplus production be used for the electrolysis of seawater for the production of hydrogen which, according to scientists, will be a fuel in common use in the future. Compressed hydrogen will be distributed to consumers in cylinders.

Desmarais made a point of stressing this: "I estimate that in terms of security, the project poses no problem. It offers 100 percent security."

During discussions which will take place at the university, debates on nuclear energy will doubtless be animated, since there are already opponents in certain Mauritian scientific sectors. Germain Comarmond, for example, recently stated that nuclear energy presents a great risk and is not necessary in light of great Mauritian potential in other forms of energy.

8143  
CSO: 5100

# NUCLEAR FIRM AUTHORITIES DEFEND PLANT COST, SAFETY

Helsinki HELSINGIN SANOMAT in Finnish 14 Dec 80 p 31

[Article by Risto Valkeapaa]

[Text] Nuclear power plants, when they work, will only produce savings. In spite of the major delays in the Loviisa plants, this is the central message in the calculations made public by Imatran Voima.

Imatran Voima proclaims that electricity produced by nuclear power is cheap in comparison with electricity produced by a coal plant. Imatran Voima calculates that the Finnish nuclear plants already have produced over 1 billion markkaa in savings.

However, the savings have not been attained very easily: the recent history of the Loviisa plants is an example of this. To bring them to production, sweat, tears and even blood plasma bags have been needed.

According to Imatran Voima, the test operation of Loviisa-2 went well and it is now able to operate to capacity. Loviisa-1, which has had long-standing troubles, will begin operations next week. Both of the Olkiluoto plants of Teollisuuden Voima are now working at 100-percent capacity.

According to the power producers, the nuclear plants have proved to be very profitable establishments despite all the problems and delays.

Imatran Voima has calculated the losses caused among other things by the delays, pressure vessel defects and inspections of the boilers. The monetary cost of the problems is estimated to be 180 million markkaa.

Imatran Voima originally estimated its earnings from the nuclear power plants would be worth that much more. The sum represents loss due to production costs, which was calculated by comparing the profitability of nuclear electricity with that of coal electricity. The sum is regarded by Imatran Voima to be relatively small.

Imatran Voima also has made public the savings produced by using the Loviisa plant as compared with a coal energy plant. Before the defects appeared, Loviisa-1 had a chance to prove its profitability. According to the calculations, it achieved a 570-million-markkaa saving in fuel costs.

Teollisuuden Voima has fared even better. The production of the nuclear power plants exceeds the figure expected 5-6 years ago by 20 percent. The savings in fuel costs are calculated by Teollisuuden Voima [TVO] to be 500 million markkaa. According to TVO, it is difficult to calculate the economic significance of the rotor defects the plants have been plagued with.

On paper, the calculations appear rosy. According to them, altogether the Finnish nuclear plants have achieved so far more than 1 billion markkaa worth of savings if the electricity they have produced is compared with electricity produced by coal power. The construction costs have not been included in these calculations.

However, these moneymakers of the power firms have been cumbersome to construct and cumbersome to run.

The Olkiluoto plants owned by Teollisuuden Voima have been troubled by rotor defects in the electrical generators. The defects have caused most trouble at the TVO-2 plant, where the test operation was discontinued in February and could be resumed only in October. TVO-1, on the other hand, had to be shut down at regular intervals to make it possible to inspect the condition of the rotor. Both plants have been working at 100-percent capacity since 11 November.

It also has been possible for Teollisuuden Voima to come to agreement with the supplier, Asea Atom, on questions concerning compensation for the defects.

The negative aspects of nuclear use may have been felt more at Imatran Voima [IVO] than at Teollisuuden Voima, although according to the report from IVO it, too, is doing well.

The plants supplied by Atomenergoexport are inexpensive to buy, inexpensive to operate and inexpensive to fix.

#### 40-Million-Markkaa Repairs

Imatran Voima calculates that the repair work now being concluded in the Loviisa plants will have cost about 40 million markkaa. Even this sum is considered by the power firm to be relatively small, because it does not significantly exceed costs of normal yearly maintenance, which is estimated at 10-20 million markkaa.

However, there is a lot behind these millions that numbers cannot express and that Imatran Voima has not always been willing to make known.

At present, the power company is actually saying rather openly that the test run of Loviisa-2 went very well and that it is operating at 80-percent capacity. Loviisa-1 is expected to start operating next week.

But a lot happened between 11 May and 14 December. On 11 May, for instance, it was not known that among other equipment, blood plasma bags were going to be needed in the plant.

In early May, Mr Anders Palmgren, D. Tech, who is the operations manager of the plants, appeared blissfully ignorant of what he would be facing during the following half-year. Even today he assured us that he believed the planned 60-day shutdown would be long enough.



On 11 May Palmgren gave a public rating to his plant, the last one for a long time to come. He put the numerical rating on the notice board in the entrance hall of the power plant. The rating indicated for a visitor in figures the capacity, length of time in the electric system, and the general situation.

The rating scale is tough. Ten, the maximum, means that the plant is ticking like a clock. That number was never seen on the board, but 9 and 9+ were common. Once in a blue moon, the figure went down to 8. It has been a matter of honor that the plant, touted as the best one in the world, operates effectively.

However, the worst possibility had shrewdly been considered. That would be a shut-down of over a month caused by serious faults. The rating would then be a zero and the situation catastrophic.

#### Castastrophe in the Boiler

A "Castastrophic" situation began to develop early in June, when it turned out that there might be something wrong with the welded seams of the boiler collectors. The boilers are transformers of heat, where the heat energy created by nuclear reaction transfers to water that rotates a turbine, and the water turns into steam. The hot water arriving in the boiler first enters the collector in the so-called hot section; from there it goes to the transfer pipes, releases its energy and leaves the boilers through the collector in the cold section.

The boiler collectors are about 2.5 meters high, 60 cm in diameter and they are made of austenite chrome and nickel steel. There is a 123-bar primary pressure in the collector during use. Outside the collector, on the inside of the boiler, there is a secondary circle pressure of 45 bars.

The fact is that there was no certainty whether the signs indicating possible defects in the collectors meant trouble. As the experts put it, indications were detected in the collectors' welded seams by X-rays. Indications, in other words, are signs of possible defects.

No ratings had yet been given to Loviisa-2--delayed because of defects in the pressure containers--by the time the boiler defects became public knowledge. However, the Council of State already had made the decision to start operation on 15 May. The Radiation Safety Institute had given permission for loading the plant with uranium fuel. On 2 June, the lid of the reactor's pressure container was shut.

After this, everything was ready for operation. However, the signs of possible defects detected in the first plant led to inspections also in the second plant's boilers. The plant now had to sit with the uranium at its core waiting out the completion of investigations.

#### Upset Over Publicity

The public became aware of the boiler defects early in June. Imatran Voima was upset by the publicity. It was reported in the TV news that the power company's stand was that the information was malicious gossip and slander. The TV film crew was not allowed in Hastholmen [site of the plant]. It had to resign itself to showing only the red light on Hastholmen gate on the screen.

Operations chief Anders Palmgren continues to say that the publicized information was only malicious gossip and slander. In his opinion, it is useless to explain such difficult scientific matters, which are over people's heads anyway.

The experts also wanted to work in peace. A project group was formed in Loviisa which concentrated on the immense task. The group worked 24 hours a day; 4,711 new X-rays were taken.

Ordinarily, the X-rays are taken one at a time. In this instance up to 30 at a time were taken. If they had been taken one at a time, the X-ray process would have lasted 5 years.

#### Blood Plasma Bags as X-Ray Equipment

It was not a simple matter to take X-rays of the collectors inside the boiler. Film cassettes had to be squeezed into the most difficult spots through 15 mm slits. They were guided to the site by strings and rails.

Some of the cassettes were guided into place in the recesses of the boiler by using blood plasma bags. The cassette with the empty bag was slid through the slit, then air was blown into the bag and it was floated; the cassette was guided precisely to the right spot by means of the filling bag.

The use of blood plasma bags in the X-ray process is one example of adapting to the demands of the situation. There were a lot of demanding situations. Finnish engineering know-how celebrated moments of lofty victories.

Imatran Voima's project group succeeded in creating a technique by which the boilers were cleaned of nuclear contamination so as to make it possible for the repairers to reach a site safely.

The invention was downright brilliant: the contamination was washed away from the boiler by using an Ahlstrom strong pump and chemical detergents. The Finns were filled with pride not only over the invention itself but also because the corresponding equipment offered by the Soviets would have been noticeably more costly.

#### Strange Phenomena

Some strange phenomena occurred during the maintenance break. In August the personal radiation meter of a radiation overseer came up with a reading that indicated that the meter had been subjected to a 200-rem radiation.

The meter is read once a month. The amount of radiation shown by the meter would already have exceeded the safe limit for humans. However, the radiation overseer displayed no symptoms indicating overexposure.

From the start it was planned to keep the yearly maintenance period at Loviisa-1 plant as short as possible. The intention was to manage it in 60 days.

During that time, the aim was to disassemble the reactor, check the condition of the corrosion-prevention layer of the pressure container and rebuild the reactor so that the uranium fuel elements on the sides of the reactor would be replaced by metallic protection elements. This was for the purpose of correcting the most



serious defect of the plant, the brittling of the pressure container, which had been more rapid than expected. In addition, several tests and readjustments connected with yearly overhaul were to be performed.

The greatest suspense was created by the condition of the corrosion-prevention layer of the pressure container at Loviisa-1. At Loviisa-2, repairs lasting several months had had to be made in the corrosion-prevention layer of the pressure container. The testing techniques had developed significantly from what they were when the pressure container was checked for the first time at Loviisa-1.

But the checking done with Kraftwerk Union equipment revealed only a few faulty spots in the Loviisa-1 pressure container. They were removed by grinding. A sigh of relief went up at Imatran Voima.

However, the inspection and repair of the boilers completely ruined the original timetable. Furthermore, when it turned out that there were indications in the main boiler valves, it became clear that the shutdown would be protracted.

The full scale of the inspection operations became obvious as early as June, when the decision was made to extend them to include all the boiler collectors. Each plant has six boilers, with two collectors each.

In spite of all this, Imatran Voima announced in July that Loviisa-1 was going to be started by the end of July. After the end of July, the starting time was changed to the end of August; in September, to the end of September; in October, to the end of October; and most recently, to the beginning of the new year. Operations chief Anders Palmgren admits that this reflects thinking along the lines of Parkinson's Law. Operations chief Palmgren also admits that the announced timetables did not fully correspond to the actual timetables as Imatran Voima knew them. "Finnish coal purchases, for example, were not arranged according to given timetables," he says.

Why then did Imatran Voima have to perform such large inspections and repairs?

In time, the Finnish experts got a chance to examine X-rays of the reexamined parts. According to the Radiation Safety Institute, these matters were studied closely at that point. The Finns also have X-rays of the welded seams of the Loviisa-2 collectors. The Radiation Safety Institute reports that these pictures have long been under discussion.

According to operations chief Anders Palmgren, in the area of nuclear power, the agreed-upon principle is that at a given point, the latest technology is utilized so as to insure quality. The technology has developed significantly in recent years.

Director Antti Vuorinen of the Radiation Safety Institute supports Palmgren. He says the development of the testing procedures helps to explain the matter.

#### Tight Security Measures

The Radiation Safety Institute, the overseeing official body, was also up against the wall during the shutdown period. Director Antti Vuorinen of the institute says: "It is naturally in the interests of the power company that the power plant is economically profitable. However, that is not our concern. Our concern is the safety of the plant."

From the international point of view, the Finnish officials operate according to very stringent safety standards. It is claimed that the Finns are actually world leaders in this, right after the West Germans.

When considering the stringency, Vuorinen says, one has to remember that a small country needs greater security than a country which has more plants and better repair possibilities.

The Radiation Safety Institute has emphasized that if quality is the goal, the most trustworthy results are going to be reached through careful preexaminations. Vuorinen states: "The best possible result will be secured, with the smallest expense, by preventing defects in advance rather than by only making the repairs necessary at each point."

According to Vuorinen, the repair work at the Loviisa plants has convinced the Radiation Safety Institute even more that it has pursued the right course of action by emphasizing preventive measures.

Antti Vuorinen says: "Future difficulties can be minimized only through extremely effective supervision and contacts with the personnel in charge of decision. We have learned through these difficulties that it is possible in Finland to repair even very difficult structures and to analyze their functioning capacity."

9571  
CSO: 5100

## FRANCE

## STATUS OF NUCLEAR POWERPLANT CONSTRUCTION PROGRAM

Madrid ENERGIA NUCLEAR in Spanish Mar-Apr 80 pp 197-198

[Text] French Nuclear Program

Status of the French nuclear program according to a publication of the French Electric (Power) Company [EDF], dated 25 January 1980:

Powerplants	Family	Type	Electric Power (MW)	Program	Year	
					Entry Into Service	Observations
Marcoule	G2	Gas-graphite	40	1955	1959	Prototypes
	G3	Gas-graphite	40	1955	1960	
Phenix		Fast breeder	250	1967	1973	CEA [Atomic Energy Commission]-EDF
Chinon (Indre-et-Loire)	1	Gas-graphite	70	1956	1963	Chinon 1 stopped in 1973
	2	Gas-graphite	210	1957	1965	
	3	Gas-graphite	480	1959	1967	
	B1	PWR [power water reactor]	875	1976	1982	
	B2		875	1977	1982	
	B3	PWR	875	1981	1986	
	B4	PWR	875	1982	1987	
Chooz (Ardennes)		PWR	280	1960	1967	
Monts d'Aree Brennilis (Finistere)		Heavy water	70	1961	1967	CEA-EDF
St-Laurent-des-Eaux (Loir-et-Cher)	1	Gas-graphite	480	1963	1969	
	2	Gas-graphite	515	1966	1971	
	B1	PWR	880	1976	1981	
	B2	PWR	880	1976	1981	

Powerplants	Family	Type	Electric Power (MW)	Program	Year	
					Entry Into Service	Observations
Bugey (Ain)	1	Gas-graphite	540	1965	1972	
	2	PWR	920	1971	1979	
	3	PWR	920	1972	1979	
	4	PWR	900	1973	1979	
	5	PWR	900	1974	1980	
Fessenheim (Haut-Rhin)	1	PWR	890	1970	1977	
	2	PWR	890	1972	1978	
Dampierre (Loiret)	1	PWR	900	1974	1980	
	2	PWR	900	1975	1980	
	3	PWR	900	1975	1981	
	4	PWR	900	1976	1981	
Tricastin (Vaucluse)	1	PWR	920	1974	1980	
	2	PWR	920	1974	1980	
	3	PWR	920	1975	1981	
	4	PWR	920	1975	1981	
Creys-Malville (Sere)		Fast breeder	1,200	1977	1983	Powerplant built in collaboration with Germany and Italy
Paluel (Seine-Maritime)	1	PWR	1,285	1976	1983	
	2	PWR	1,285	1977	1983	
	3	PWR	1,285	1978	1984	
	4	PWR	1,285	1980	1985	
Gravelines (Nord)	B1	PWR	920	1974	1980	
	B2	PWR	920	1974	1980	
	B3	PWR	920	1975	1981	
	B4	PWR	920	1976	1981	
	C5	PWR	920	1980	1984	
	C6	PWR	920	1980	1985	
Le Blayaïs (Gironde)	1	PWR	920	1975	1981	
	2	PWR	920	1977	1982	
	3	PWR	920	1977	1982	
	4	PWR	920	1977	1983	
Cruas (Ardeche)	1	PWR	880	1978	1983	
	2	PWR	880	1978	1983	
	3	PWR	880	1979	1984	
	4	PWR	880	1979	1984	

Powerplants	Family	Type	Electric Power (MW)	Program	Year
					Entry Into Observations Service
Flamanville (Manche)	1	PWR	1,285	1979	1985
	2	PWR	1,285	1980	1985
Cattenom (Moselle)	1	PWR	1,270	1979	1985
	2	PWR	1,270	1980	1986
	3	PWR	1,270	1982	1987
St-Aiban (Isere)	1	PWR	1,285	1979	1984
	2	PWR	1,285	1980	1985
Belleville (Cher)	1	PWR	1,270	1981	1986
	2	PWR	1,270	1981	1987
Nogent (Aube)	1	PWR	2 x 1,270	1981	1987
Le Pellerin (Loire-Atlantique)	1	PWR	1,270		
	2	PWR	1,270		
Golfech	1	PWR	1,270	1982	1988

2909

CSO: 5100

FRANCE

#### BRIEFS

NUCLEAR PLANT REPORTS ACCIDENT--Paris, 15 Jan (AFP)--A further accident has occurred at the state-owned Cogema Company's nuclear processing station at La Hague, near Cherbourg, a Cogema spokesman said today. The spokesman said the accident occurred last Sunday, when several litres (gallons) of nitric acid containing uranium and plutonium leaked through a faulty joint into a tank designed to hold such leakages. It took two-and-a-half days to repair the joint, the spokesman said. The escaped liquid was described as mildly radioactive. Four days previously a fire in a silo containing nuclear waste produced what Cogema [words indistinct] slight contamination. [Text]  
[NC151818 Paris AFP in English 1810 GMT 15 Jan 81]

CSD: 5100



## INTERCHURCH PEACE COUNCIL OPPOSES NUCLEAR WEAPONS

### Reactions to Synod Stance

Rotterdam NRC HANDELSBLAD in Dutch 25 Nov 80 p 3

[Report on CDA (Christian Democratic Appeal) and PvdA (Labor Party) reactions to a Reformed Synod resolution supporting the Inter-Church Peace Council (IKV) stand against nuclear weapons in the Netherlands]

[Text] The Hague, 25 Nov--Dr R.F.M. Lubbers, the CDA delegation leader in the Second Chamber, reacted reservedly to the resolution by the Synod of the Reformed Church that not only the use but also the possession of nuclear weapons must be refused.

At a CDA meeting in Drachten, Lubbers said he had no difficulty with the statement "as a pious wish," but he warned at the same time that this statement must not be taken as a concrete voting recommendation.

Dr J.M. Den Uyl, the PvdA delegation leader, expressed himself yesterday in a reaction as satisfied with the intent of the statement, but found it lacking in clarity as to the manner in which denuclearization must be achieved.

Den Uyl accused the Synod of placing too much emphasis on unilateral steps: "I am sorry that the letter did not speak out about common action on the part of small countries, or about the international reactions to unilateral steps by the Netherlands."

Lubbers warned in Drachten against the danger of unilateral disarmament. "With the abolition of nuclear weapons you can provoke just those actions that you do not want. Abolition means that it is not unattractive for the Soviet Union to invade here," according to Lubbers.

De Geus

Yesterday on NCRV [Netherlands Christian Broadcasting Association] Radio, Minister of Defense De Geus (CDA) criticized the Synod's statement. "I am afraid that this sort of imbalanced statement even undermines our position with respect to the allies whom we must get to go along with us."

De Geus also opposed the intensive manner in which the Reformed Church, of which he is also a member, involves itself in the question of nuclear weapons. He saw in that an imbalanced involvement in society and charged that the church "devotes no attention, no matter how you put it" to the question of abortion.

#### IKV Ideology

Rotterdam NRC HANDELSBLAD in Dutch 27 Nov 80 p 7

[Article by G. Van Benthem Van Den Bergh: "Nuclear Weapons Out of the Netherlands: Inappropriate Strategy for Peace"]

[Text] G. Van Benthem Van Den Bergh is the senior scientific worker for international relations at the Institute of Social Studies at The Hague and a member of the Labor Party.

The Netherlands does not possess nuclear weapons nor the capability to produce them quickly. Still nuclear weapons threaten to become the most important issue in the coming elections. The Reformed Synod has now also supported the program of the Inter-Church Peace Council, while the Dutch bishops are advised to do the same in a report by Pax Christi published at their request. In the Labor Party the tide threatens to turn on Den Uyl, and in D'66 [the Democrats of 1966] and the CDA as well the battle is in full swing. Should the PvdA congress support the IKV slogan "Ban the Bomb From the World Starting With the Netherlands," the CDA-VVD [People's Party for Freedom and Democracy] coalition will continue to govern for a long time.

The penetration of the IKV proposals through domestic politics now overshadows the discussion about the meaning of that about which it is really all about: the contribution of the Netherlands' foreign and defense policy to preventing a nuclear war. The question of whether the IKV program is based on an accurate diagnosis of the illness (arms race; nuclear proliferation; militarization of international politics) remains in the background, just as does the related question of whether the measure recommended in the IKV proposal can contribute to recovery. That is sad, for the attempt by the IKV and Pax Christi is important enough in itself. I prefer the IKV to the doom thinkers, who tell us that a third world war--the nuclear apocalypse--is unavoidable.

All the more, then, do I regret that the IKV is so fixed upon nuclear weapons, that it concentrates on a derivative rather than on the real source of the danger: the rivalry between the major powers, specifically the triangular conflict among the Soviet Union, China and the United States. Instead of blowing away the smokescreen of myths surrounding nuclear weapons, the IKV supports the atomic weapons mythology. In so doing, the IKV reinforces--unintentionally, I assume--needless feelings of anxiety.

The IKV proposal is based on a false diagnosis. In that it resembles blood letting a great deal, which was also a cure-all based on inadequate knowledge which could sometimes so weaken the patient that he died not of the illness but of the cure. It is not as bad as that with the IKV slogan, but the nature of the proposed remedy does bear a resemblance to blood letting. If nuclear weapons but be removed from the Netherlands, the patient (the world threatened by nuclear war) will recover of itself.

## Magic

Sadly enough, there is no single reason to suppose that that will really happen. Instead, more reasonable chances the Netherlands has to use its influence for the good are made more difficult by it. The IKV does not involve the more reasonable chances, such as that the Netherlands urge the transition to a minimal nuclear deterrent force within the NATO framework--in its own arguments. That sort of proposal is more complicated and cannot be incorporated as handily into a slogan appealing to magical and moralistic thought. But the IKV and Pax Christi themselves say that the discussion must not deal with the slogan, but with the argument on which the IKV proposal is based. Therefore, in the following I will make use of the recent Pax Christi report, RK KERK (Roman Catholic Church), nuclear weapons and disarmament.

The Pax Christi report is based on a book that appeared in 1962 by the American social psychologist Charles Osgood. In it he worked out a proposal to reach disarmament in a period in which the United States and the Soviet Union were still involved in the Cold War. It is recognized as GRIT (Graduated Reciprocation in Tension Reduction), and is discussed exhaustively by the current chairman of the IKV, the Groningen polemologist Ben Ter Veer (in *TRANSACTIE*, December 1971). Osgood's proposal, modified for the Netherlands by Ter Veer and the IKV, can be reduced to this: a unilateral step towards disarmament is made by the United States without requiring a quid pro quo from the Soviet Union in advance--in the hope that this step will be answered and that in this manner a disarmament process can be set in action--whether or not it is formalized in negotiations and treaties.

## No Answer

At the time, it was not a bad proposal--and it need not be one today. But then it must be undertaken by one of the major powers itself, which would be able to use it to stabilize the nuclear balance of power and put an end to the race in nuclear arms technology. But what is the IKV doing? It is simplistically substituting the Netherlands for one of the powers that possesses nuclear weapons, and maintains without a shred of evidence that one of the East European members of the Warsaw Pact would be able to answer the Netherlands. In this way the Netherlands would be able to bring the United States and the East European countries would be able to bring the Soviet Union to put GRIT into practice. How can a polemologist like Ter Veer dare to announce that?

In the first place, there are sharp indications that no nuclear warheads are stored in East Europe, only weapons systems on which nuclear warheads can be mounted. The Russians are still more afraid of their own allies, and their own weapons, than the Americans. But it is even more important that, in view of the internal tensions existing within East Europe, there is no sign of a chance that any East European country will cross the foreign policy of the Soviet Union. The East European countries have no margin for that, if they ever had any. In a discussion with one of the authors of the Pax Christi report, he pointed out to me the good relations Pax Christi has in Poland, but he had to admit that it was out of the question that under the present circumstances Poland could permit itself even the slightest deviation from the foreign policy of the Soviet Union. And what does former Minister Trip (*DE NIEUWE LINIE*, 5 November 1980) say on the question of what Pax Christi would have to do if the expected answer to the Netherlands

unilateral step were withheld? "Then we wind up in a very difficult situation, because on the forche of our own principles we cannot continue endlessly making unilateral steps--that would mean unilateral disarmament and Pax Christi does not want that." But it is out of the question that the Netherlands' unilateral step be answered.

The IKV slogan is furthermore misleading because the Netherlands itself does not have nuclear weapons at its disposal at all. The talk about nuclear weapons tasks, which is pivotal to the current discussion in the Labor Party, is also misleading. The Netherlands does not have any jurisdiction at all over the nuclear warheads themselves. Dutch soldiers are employed in the outermost ring of guards at nuclear weapons storage facilities, and the Dutch armed forces within the NATO alliance are equipped with weapons systems (Starfighters, Lance rockets and howitzers) on which nuclear warheads can be mounted. But the Netherlands has no say as to the employment of them--except (in theory) that it can prohibit that employment. The removal of nuclear warheads from the Netherlands and withdrawal from "nuclear tasks," then, mean practically nothing to the suppression of nuclear weapons. The only result is that nuclear warheads will be transferred to other NATO countries, and that the weapons systems assigned to the Dutch armed forces will be reassigned to other--read German--armed forces. The Dutch position in NATO would then be comparable de facto to that of France.

#### Quicksand

Therefore the IKV argument is founded on quicksand. It is a form of blood letting that does not contribute to the recovery of the patient. It can only give the Netherlands the appearance of having its hands clean, without it costing anything. If the IKV wants more than moral and ethical purity, it will have to work out proposals on the basis of which Dutch foreign policy can contribute to increasing the chances for peace and security in the world. That demands a better diagnosis of the tensions and conflicts that can lead to war. That is not primarily a matter of nuclear weapons, but of the continuing rivalry between the great powers. Nuclear weapons contribute to increasing the self control of the leaders of the great powers and thus also fulfill positive functions along with the great dangers which are implicit in their existence.

Therefore tapping the world's veins is not the remedy, but the stabilization of the balance of nuclear power and the prevention as far as possible of further proliferation of nuclear weapons in the world. Therefore the IKV's thinking ought rather to be directed towards the renewed thinking in terms of the possibility of limited nuclear war and towards the continuation of the technological arms race, which could in the future disturb the now existing nuclear balance of power. Besides that, the Netherlands (and Western Europe) could help oppose the militarization of the Third World and can reduce the penetration of the rivalry between the major powers into the Third World: the Middle East, Southeast Asia, Southern Africa, Latin America. Such a peace strategy makes it necessary that the Netherlands is taken seriously in the international forums where influence can be exercised and that it be judged by the content of its proposals. A Dutch government that would carry out the current IKV proposal, on the other hand, could count on the reaction: "If you want to put in your two pins worth, put up your two pins."

If the IKV and Pax Christi do not want to give up on this blood letting, and want to take their own proposals seriously, then they would do better for the time being to sing one note lower.



# DUTCH, BRAZILIAN COLLABORATION ON NUCLEAR ENERGY POSTPONED

Rotterdam NRC HANDELSBLAD in Dutch 5 Dec 80 pp 1, 14

[Article by Roel Janssen]

[Text] The Netherlands must make use of the extra time which has arisen through the delay in the execution of the Brazilian nuclear energy program in order to arrive at the formulation of an international storage program for plutonium, said Relus ter Beek, the PvdA member of the chamber, and the leader of a parliamentary delegation which paid a visit to Brazil this week.

The delegation, which also included Ploeg (People's Party for Freedom and Democracy), Brinkhorst (Democrats '66), and Scholten (Christian Democratic Appeal), while in Brazil, discussed the nuclear energy program.

More than 2 years after the sensational debate in Parliament on the delivery to Brazil of enriched uranium by the German, British, Dutch consortium Urenco, a Dutch delegation has now finally taken the trouble to study the situation on the spot. "We have been impressed by the determination on the part of the Brazilians to go through with the entire nuclear energy program," said Ter Beek after the delegation had talked with Paulo Nogueira Batista, the president of the state-owned enterprise Nuclebras.

Owing to the delays in the construction of the nuclear plants, the first reactor, for which the enriched uranium from Urenco is intended, Angra-2, will be put in operation at least 3 years later than was planned. Nogueira Batista informed the parliamentarians that Angra-2 will be in operation in 1986. To what extent this is bluff will probably be shown closer to that time. As Urenco will be delivering enriched uranium as from 1982, Nuclebras has asked Urenco to postpone the deliveries for a few more years.

The management of Urenco, which bases itself on the sound Dutch business principle "business is business," has rejected that proposal. Nogueira Batista told the surprised parliamentary delegation that the enriched uranium, 200 tons per year, therefore, will be stored at the fission rod factory for the time being.

This factory, moreover, is not yet under construction. A simple calculation indicates that Brazil, as a result, will be left with a surplus of enriched uranium till far into the nineties, and if the nuclear energy program will take

longer to materialize than what Nogueira Batista imagines, the fuel will be lying there much longer still.

The processing of the waste from the nuclear plants, whereby the dangerous plutonium is released, will not pose serious problems in the years to come. It is only toward the end of 1980 that a few kilos of plutonium will be released from a small test plant.

As is well-known, the Dutch parliament, in 1978, made it a precondition for the delivery of enriched uranium that there will be a prospect of arriving at an international storage program for plutonium once Brazil starts the processing.

Negotiations on this subject are being carried on within the International Atomic Energy Agency (IAEA). According to Ter Beek, the delays in the Brazilian nuclear program must now be used to arrive at an agreement. At the same time, he finds that the Netherlands must oppose the idea that a storage program for plutonium is only possible if, at the same time, an arrangement is arrived at for the assured delivery of nuclear fuel.

Also this question is the subject of negotiations within the IAEA. Ter Beek was under the impression that the first point is acceptable to Brazil. According to him, the question remains whether Brazil also be prepared to have the storage program and the arrangement for the assured delivery discussed as separate issues in the negotiations.

7262

CSO: 5100

END



**END OF**

**FICHE**

**DATE FILMED**

Feb. 4 1981